PowerScan® PBT7100 Cordless

Linear Imaging Barcode Reader

Product Reference Guide

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NOTES

Chapter 1
Introduction

About this Guide

This Product Reference Guide (PRG) is provided for users seeking advanced technical information, including connection, programming, maintenance and specifications. The Quick Reference Guide (QRG) and other publications associated with this product are downloadable free of charge from the website listed on the back cover of this manual.

Typically, units are factory-programmed for the most common terminal and communications settings. If you need to modify any programmable settings, custom configuration can be accomplished by scanning the programming barcodes within this guide.

Programming can alternatively be performed using the Datalogic Aladdin™ Configuration application which is downloadable from the Datalogic website listed on the back cover of this manual. This multi-platform utility program allows device configuration using a PC. It communicates to the device using a serial or USB cable and can also create configuration barcodes to print.

Manual Overview

Chapter 1, Introduction provides a product overview, unpacking instructions, and cable connection information.
Chapter 2, Getting Started presents information about unpacking and setting up the reader.
Chapter 3, Interfaces consists of interface configuration barcodes and details.
Chapter 4, General Features includes programming barcodes for selecting common features for the reader and general use barcodes to customize how the data is transmitted to the host device.
Chapter 5, RS-232 ONLY Interface supplies information about setting up the reader for RS-232 operation.
Chapter 6, RS-232/USB-Com Interfaces features information about options involving both the RS-232 and USB-Com interfaces.
Chapter 7, Keyboard Interface discusses how to set up the reader for Keyboard Wedge operation.
Chapter 8, USB-OEM Interface explains how to set the reader up for USB operation.
Chapter 9, IBM 46XX Interface is a resource for setting up an IBM interface.
Chapter 10, Data Editing offers advanced configuration options for customization of scanned data output.

Chapter 11, Symbologies defines options for all symbologies and provides the programming barcodes necessary for configuring these features.

Appendix A, Technical Specifications lists physical and performance characteristics, as well as environmental and regulatory specifications. It also provides standard cable pinouts.

Appendix B, Standard Defaults references common factory default settings for reader features and options.

Appendix C, LED and Beeper Indications supplies tables containing descriptions of the functions and behaviors of the reader's LED and Beeper indicators.

Appendix D, Sample Barcodes offers sample barcodes of several common symbologies.

Appendix E, Keypad includes numeric barcodes to be scanned for certain parameter settings.

Appendix F, Scancode Tables lists control character emulation information for Wedge and USB Keyboard interfaces.

Manual Conventions

The following conventions are used in this document:

The symbols listed below are used in this manual to notify the reader of key issues or procedures that must be observed when using the reader:

NOTE

Notes contain information necessary for properly diagnosing, repairing and operating the reader.

CAUTION

The CAUTION symbol advises you of actions that could damage equipment or property.

References

Current versions of the Product Reference Guide (PRG), Quick Reference Guide (QRG), the Datalogic Aladdin™ Configuration application, and any other manuals, instruction sheets and utilities for this product can be downloaded from the website listed on the back cover of this manual. Alternatively, printed copies or product support CDs can be purchased through your Datalogic reseller.

Technical Support

Datalogic Website Support

The Datalogic website (www.scanning.datalogic.com) is the complete source for technical support and information for Datalogic products. The site offers product support, product registration, warranty information, product manuals, product tech notes, software updates, demos, and instructions for returning products for repair.

Reseller Technical Support

An excellent source for technical assistance and information is an authorized Datalogic reseller. A reseller is acquainted with specific types of businesses, application software, and computer systems and can provide individualized assistance.

Telephone Technical Support

If you do not have internet or email access, you may contact Datalogic technical support at (541) 349-8283 or check the back cover of your manual for more contact information.

NOTES

Chapter 2

Getting Started

About the Reader

Advancements in the LED technology used in this reader significantly improve the illumination of the target field of view, resulting in higher scan efficiency. Whether used in Single Trigger or Continuous Mode, the ergonomic design of the reader will help to promote comfortable handling during extended periods of use.
The reader/Base Station can communicate using the following interfaces:

RS-232 — The reader can communicate with a standard or Wincor-Nixdorf (W-N) RS-232 host.

RS-232 OPOS — This interface is used for OPOS/UPOS/JavaPOS systems.

Keyboard Wedge (KBW) — When connected using this interface, the host interprets scanned data as keystrokes and supports several international keyboards (for the Windows® environment). See Country Mode on page 74 for a full listing.

USB — Select to communicate either by USB OEM, USB COM, USB Keyboard interface or USB POS types by scanning the appropriate interface type barcodes available in this manual. The default interface is USB-KBD for Wedge models (7230) and USB-OEM for IBM models (7210).

IBM — IBM Port 5B or Port 9B are selectable interface options.

Unpacking

Check carefully to ensure the reader, Base Station and any accessories ordered are present and undamaged. If any damage occurred during shipment, contact Technical Support on page 3.
KEEP THE PACKAGING. Should the unit ever require service, it should be returned in its original shipping container.

Setting Up the Reader and Base Station

Follow the steps provided in this section to connect and get your reader up and communicating with its host:

1. Install the Battery in the Reader
2. Connect the Base Station
3. Select the Interface Type
4. Configure Interface Settings (only if not using factory settings for that interface)
5. Configure Other Features (if modifications are needed from factory settings)

Install the Battery in the Reader

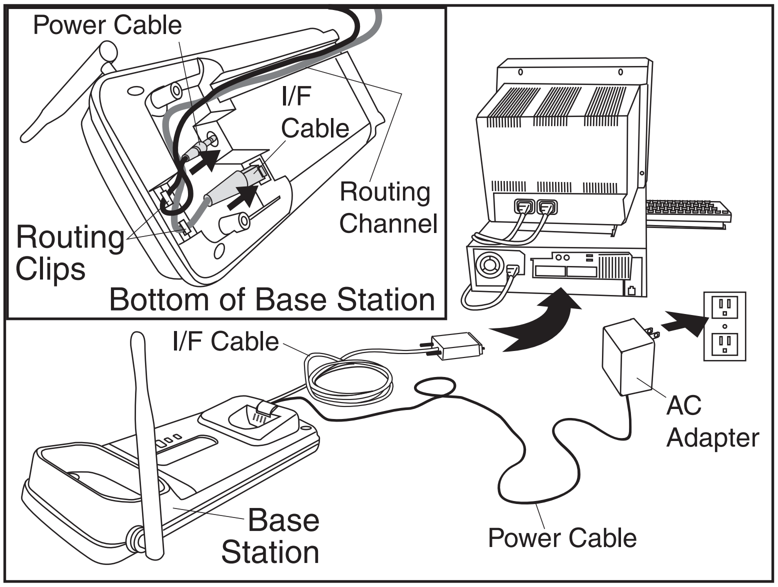
Follow the instructions in the Quick Reference Guide (QRG) to install the battery pack and verify reader operation.

Connect the Base Station

Figure 1 shows how to connect the Base Station to a terminal, PC or other host device. Turn off the host before connection and consult the manual for that equipment (if necessary) before proceeding. Connect the interface cable before applying power to the Base Station.

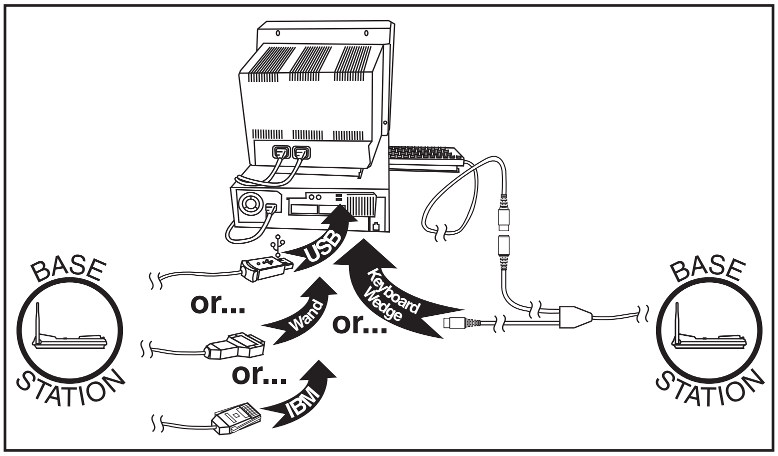
Base Station Connection and Routing — Fully insert the Power Cable and Interface (I/F) Cable connectors into their respective ports in the underside of the Base Station (see Figure 1), then plug the Base Station AC Adapter into the AC outlet. Alternatively, you can either loop the cables around the routing clips and back through the routing channel to the front of the Base Station as shown, or the cables can be fed directly out the back of the Base Station via the routing clips.

Figure 1. Connecting the Base Station



Host Connection — The interface type was specified at the time your reader was ordered, however you should verify before connection that the reader's cable type is compatible with your host equipment. Most connections plug directly into the host device as shown in Figure 2. Keyboard Wedge interface cables have a 'Y' connection where its female end mates with the male end of the cable from the keyboard and the remaining end at the keyboard port on the terminal/PC.

Figure 2. Connecting to the Host



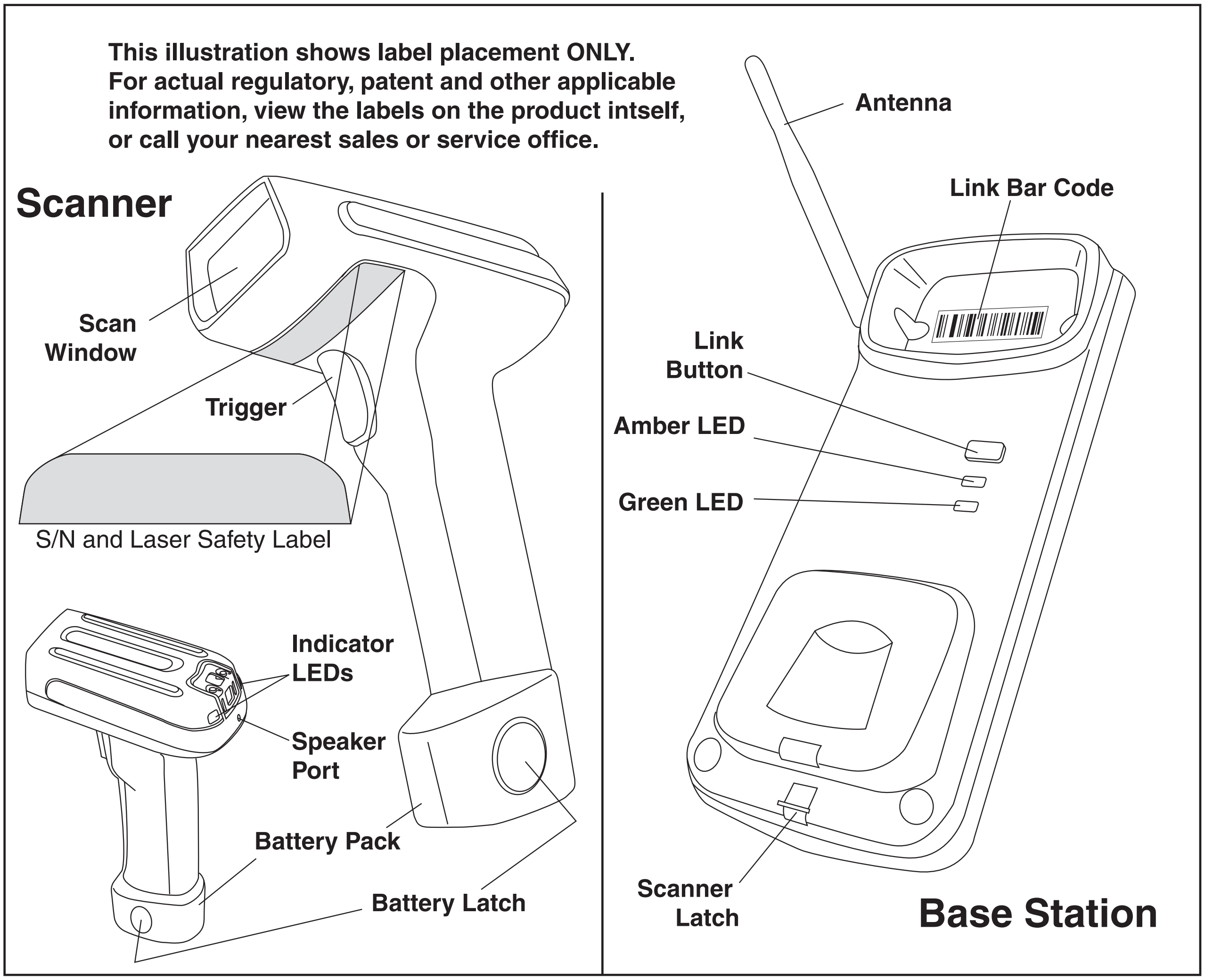
Power Connection — Plug the AC Adapter in to an approved AC wall socket with the cable facing downwards (as shown in Figure 1) to prevent undue strain on the socket.

Linking the Reader to a Base Station

To link a reader to a Base Station, press the Link Button (see Figure 3) on the Base Station for at least one second to place the base in "Link Mode," then scan the barcode below or the Link barcode located on the Base Station using the reader to be linked. The Link barcode on the Base Station contains an identifier that is unique to that Base Station. This enables the reader to quickly find and link to that Base Station.

A successful link is indicated by three ascending tones from the reader. A high-low-high-low tone indicates the link attempt was unsuccessful. A single green LED flash during this tone indicates no Base Station was discovered. Two green LED flashes during this tone indicates that more than one Base Station was discovered and the reader did not link. Three LED flashes during this tone indicate a security error.

Figure 3. Labeling and Nomenclature


This illustration shows label placement ONLY.
For actual regulatory, patent and other applicable information, view the labels on the product intself, or call your nearest sales or service office.
Scanner
Scan Window
Trigger
S/N and Laser Safety Label
Indicator LEDs
Speaker Port
Battery Pack
Battery Latch
Antenna
Link Bar Code
Link Button
Amber LED
Green LED
Scanner Latch
Base Station

Optional: Linking the Reader to a PC

A reader can optionally be linked to a Bluetooth-enabled PC with the serial port profile. To do this, follow these steps:

1. Ensure the PC or terminal can network with Bluetooth devices and that it is powered on.
2. Scan the "Link to a PC" barcode below.

Link to a PC

3. On the PC, scan for network devices.
4. Select the "Datalogic PBT7100 Reader." Make sure "Secure Connection" is disabled.
5. Select "connect" on the PC to link the reader to the PC.

Paging Feature

To help locate a missing reader, press the Base Station Link Button momentarily (less than one second). This will cause the reader to beep five times at its loudest volume setting.

Programming

The reader is typically factory-configured with a set of default features. After scanning the interface barcode from the Interfaces section, you can select other options and customize your reader through use of the instructions and programming barcodes available in the corresponding features section for your interface and also the Data Editing and Symbologies chapters of this manual.

Using the Programming Barcodes

This manual contains feature descriptions and barcodes which allow you to reconfigure your reader and Base Station. Some programming barcode labels, like the Standard Product Default Settings on page 10, require only the scan of that single label to enact the change. Most of the programming labels in this manual, however, require the reader to be placed in Programming Mode prior to scanning them. Scan an ENTER/EXIT barcode once to enter Programming Mode. Once the reader is in Programming Mode, you can scan a number of parameter settings before scanning the ENTER/EXIT barcode a second time, which will then accept your changes, exit Programming Mode and return the reader to normal operation.

NOTE

There are some exceptions to the typical programming sequence described above. Please read the description and setting instructions carefully when configuring each given programmable feature.

Select the Interface Type

Upon completing the physical connection between the Base Station and the host, proceed directly to Interfaces on page 11 for information and programming for the interface type the Base Station is connected to (for example: RS-232, Keyboard Wedge, USB, etc.) and scan the appropriate barcode in that section to select your system's correct interface type.

Configure Interface Settings

Each interface type is associated to a specific set of default features. If after scanning the interface barcode from the Interfaces section, your installation requires you to select options to further customize your reader, turn to the appropriate section for your interface type as listed below:

- RS-232 ONLY Interface, starting on page 47
- RS-232/USB-Com Interfaces, starting on page 53
- Keyboard Interface, starting on page 73

- USB-OEM Interface, starting on page 87
- IBM 46XX Interface, starting on page 89

Configure Other Features

If your installation requires different programming than the standard factory default settings, the following sections of this manual allow configuration of non-interface-specific settings you might require:

General Features — General Features includes programming for scanning, beeper and LED indicators and other such universal settings.

Symbologies — Includes options concerning the barcode label types (symbologies). These settings allow you to enable/disable symbologies, set label lengths, require check digit, etc.

Resetting the Standard Product Defaults

If you aren't sure what programming options are in your reader, or you've changed some options and want the factory settings restored, scan the Standard Product Default Settings barcode below. This will copy the factory configuration for the currently active interface to the current configuration.

NOTE

Factory defaults are based on the interface type. Configure the reader for the correct interface before scanning this label.

Standard Product Default Settings

The programming section lists the factory default settings for each of the menu commands (indicated by shaded blocks and bold text) on the following pages.

Chapter 3

Interfaces

Interface Selection

Each reader model will support one of the following sets of host interfaces:

General Purpose Models (5 volt supply)
RS-232
RS-232 OPOS
USB
Keyboard Wedge

Retail Point of Sale Models (4 to 14 volt supply)
RS-232
RS-232 OPOS
USB
IBM 46XX

Configuring the Interface

Scan the programming barcode from this section which selects the appropriate interface type matching the system the reader will be connected to. Next, proceed to the corresponding chapter in this manual (also listed in Table 1) to configure any desired settings and features associated with that interface.

NOTE

Unlike some other programming features and options, interface selections require that you scan only one programming barcode label. DO NOT scan an ENTER/EXIT barcode prior to scanning an interface selection barcode.

Some interfaces require the scanner to start in the disabled state when powered up. If additional scanner configuration is desired while in this state, pull the trigger and hold it for five seconds. The scanner will change to a state that allows programming with barcodes.

Table 1. Available Interfaces

RS-232		**FEATURES**
RS-232 standard interface	Select RS232-STD	Set RS-232 Interface Features starting on page 47
Select RS232-WN	RS-232 Wincor-Nixdorf	
RS-232 for use with OPOS/UPOS/JavaPOS	**Select RS-232 OPOS**	
Select USB-COM-STD[a]	USB Com to simulate RS-232 standard interface	
IBM		**FEATURES**
Select IBM-P5B	IBM-46xx Port 5B reader interface	Set IBM Interface Features starting on page 89
IBM-46xx Port 9B reader interface	Select IBM-P9B	
USB-OEM		**FEATURES**
Select USB-OEM	USB-OEM (can be used for OPOS/UPOS/JavaPOS)	Set USB-OEM Interface Features starting on page 87

[a] Download the correct USB Com driver from www.datalogic.com

KEYBOARD		FEATURES
AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Standard Key Encoding	Select KBD-AT	Set KEYBOARD WEDGE Interface Features starting on page 73
Select KBD-AT-NK	Keyboard Wedge for IBM AT PS2 with standard key encoding but without external keyboard	
AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Alternate Key	Select KBD-AT-ALT	
Select KBD-AT-ALT-NK	Keyboard Wedge for IBM AT PS2 with alternate key encoding but without external keyboard	
PC/XT w/Standard Key Encoding	Select KBD-XT	
Select KBD-IBM-3153	Keyboard Wedge for IBM Terminal 3153	

KEYBOARD — cont.		FEATURES
Keyboard Wedge for IBM Terminals 31xx, 32xx, 34xx, 37xx make only keyboard	**Select KBD-IBM-M**	Set KEYBOARD WEDGE Interface Features starting on page 73
Select KBD-IBM-MB	Keyboard Wedge for IBM Terminals 31xx, 32xx, 34xx, 37xx make break keyboard	
Keyboard Wedge for DIGITAL Terminals VT2xx, VT3xx, VT4xx	Select KBD-DIG-VT	
Select USB Keyboard	USB Keyboard with standard key encoding	
USB Keyboard with alternate key encoding	Select USB Alternate Keyboard	
Select USB-KBD-APPLE	USB Keyboard for Apple computers	

Global Interface Features

The following interface features are configurable by all interface types. To set features specific to your interface, turn to that section of this manual:

- RS-232 ONLY Interface on page 47
- Keyboard Interface on page 73
- USB-OEM Interface on page 87
- IBM 46XX Interface on page 89

Host Commands — Obey/Ignore

This option specifies whether the reader will obey or ignore host commands. When set to ignore, the reader will ignore all host commands except for those necessary for:

- service mode
- flash programming mode
- keeping the interface active
- transmission of labels.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Host Commands = Obey
Host Commands = Ignore	

USB Suspend Mode

This setting enables/disables the ability of USB interfaces to enter suspend mode.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	USB Suspend Mode = Disable
USB Suspend Mode = Enable	

Chapter 4

General Features

Double Read Timeout

To prevent a double read of the same label, the Double Read Timeout sets the minimum time allowed between reads of labels of the same symbology and data. If the unit reads a label and sees the same label again within the Double Read Timeout, the second read of the label will be ignored. Double Read Timeout does not apply to scan modes that require a trigger pull for each label that is read.

ENTER/EXIT PROGRAMMING MODE

	Double Read Timeout = 0.1 Second
Double Read Timeout = 0.2 Second	
	Double Read Timeout = 0.3 Second
Double Read Timeout = 0.4 Second	DEFAULT

Double Read Timeout — continued

ENTER/EXIT PROGRAMMING MODE

Double Read Timeout = 0.5 Second

Double Read Timeout = 0.6 Second

Double Read Timeout = 0.7 Second

Double Read Timeout = 0.8 Second

Double Read Timeout = 0.9 Second

Double Read Timeout = 1 Second

Label Gone Timeout

This feature sets the time after the last label segment is seen before the reader prepares for a new label. The timeout can be set within a range of 10 milliseconds to 2,550 milliseconds (2.55 seconds) in 10ms increments.

Follow these instructions to set this feature:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield three digits. For example: 0 = 000, 5 = 005, 20 = 020, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT LABEL GONE TIMEOUT SETTING.
5. Scan the appropriate three alpha-numeric characters from the keypad in Appendix E, Keypad representing the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 2 for some examples of how to set this feature.

Table 2. Timeout Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	50ms	150ms	1800ms (1.8 sec.)	2550ms (2.55 sec.)
2	Divide by 10 (and pad with leading zeroes)	005	015	180	255
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT LABEL GONE TIMEOUT SETTING				
5	Scan Three Characters From Appendix E, Keypad	‘0’, ‘0’ and ‘5’	‘0’, ‘1’ and ‘5’	‘1’, ‘8’ and ‘0’	“2’, ‘5’ and ‘5’
6	Scan ENTER/EXIT PROGRAMMING MODE				

Label Gone Timeout — cont.

ENTER/EXIT PROGRAMMING MODE

Select Label Gone Timeout Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

016 = Timeout of 160 ms

Sleep Mode Timeout

Specifies the timeout value for the reader to enter low power Sleep Mode.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Sleep Mode Timeout = Disable
Sleep Mode Timeout = 500ms	
	Sleep Mode Timeout = 1 Second
Sleep Mode Timeout = 2 Seconds	
	Sleep Mode Timeout = 3 Seconds
Sleep Mode Timeout = 4 Seconds	

Sleep Mode Timeout — continued

ENTER/EXIT PROGRAMMING MODE

	Sleep Mode Timeout = 5 Seconds
Sleep Mode Timeout = 6 Seconds	
	Sleep Mode Timeout = 7 Seconds
Sleep Mode Timeout = 8 Seconds	
	Sleep Mode Timeout = 9 Seconds
Sleep Mode Timeout = 9.9 Seconds (9,900ms max.)	

LED and Beeper Indicators

Power On Alert

Disables or enables the indication (from the Beeper) that the reader is receiving power.

ENTER/EXIT PROGRAMMING MODE

	Power On Alert = Disable (No Audible Indication)
Power On Alert = Four Beeps	DEFAULT

Good Read: When to Indicate

This feature specifies when the reader will provide indication (beep and/or flash its green LED) upon successfully reading a barcode. Choices are:

- Good Read = Indicate after decode
- Good Read = Indicate after transmit
- Good Read = Indicate after CTS goes inactive, then active

This option, which uses CTS, is only valid for RS-232 interfaces.

NOTE

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Indicate Good Read = After Decode
Indicate Good Read = After Transmit	
	Indicate Good Read = After CTS Goes Inactive, Then Active

Good Read Beep Type

Specifies whether the good read beep has a mono or bitonal beep sound.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Good Read Beep Type = Mono
Good Read Beep Type = Bitonal	

Good Read Beep Frequency

Adjusts the good read beep to sound at a selectable low, medium or high frequency, selectable from the list below. (Controls the beeper's pitch/tone.)

ENTER/EXIT PROGRAMMING MODE

	Good Read Beep Frequency = Low
Good Read Beep Frequency = Medium	
DEFAULT	Good Read Beep Frequency = High

Good Read Beep Length

Specifies the duration of a good read beep.

ENTER/EXIT PROGRAMMING MODE

	Good Read Beep Length = 60 msec

Good Read Beep Length — continued

ENTER/EXIT PROGRAMMING MODE

Good Read Beep Length = 80 msec	DEFAULT
	Good Read Beep Length = 100 msec
Good Read Beep Length = 120 msec	
	Good Read Beep Length = 140 msec
Good Read Beep Length = 160 msec	
	Good Read Beep Length = 180 msec
Good Read Beep Length = 200 msec	

Good Read Beep Volume

Selects the beeper volume (loudness) upon a good read beep. There are three selectable volume levels.

ENTER/EXIT PROGRAMMING MODE

	Good Read Beep Volume = Beeper Off
Good Read Beep Volume = Low	
	Good Read Beep Volume = Medium
Good Read Beep Volume = High	DEFAULT

Good Read LED Duration

This feature specifies the amount of time that the Good Read LED remains on following a good read. The good read LED on time can be set within a range of 10 milliseconds to 2,550 milliseconds (0.001 to 2.55 seconds) in 10ms increments.

Follow these instructions to set this feature:

1. Determine the desired setting in milliseconds. A setting of 0 means that the good read LED stays on until the next time the trigger is pulled.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield three digits. For example: 0 = 000, 5 = 000, 20 = 020, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT GOOD READ LED DURATION SETTING.
5. Scan the appropriate three digits from the keypad in Appendix E, Keypad representing the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 3 for some examples of how to set this feature.

Table 3. Good Read LED Duration Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	Good Read LED stays on until next trigger pull (00)	20ms	150ms	2550ms (2.55 sec.)
2	**Divide by 10 (and pad with leading zeroes)**	000	002	015	255
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT LABEL GONE TIMEOUT SETTING**				
5	**Scan Three Characters From** Appendix E, Keypad	‘0’, ‘0’ and ‘0’	‘0’, ‘0’ and ‘2’	‘0’, ‘1’ and ‘5’	‘2’, ‘5’ and ‘5’
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

Good Read LED Duration — cont.

ENTER/EXIT PROGRAMMING MODE

Select Good Read LED Duration Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT

020 = Good Read LED stays on for 2 seconds.

NOTE

Indicators are dimmed during sleep.

Scanning Features

Scan Mode

Selects the scan operating mode for the reader. Selections are:

Trigger Single — When the trigger is pulled, scanning is activated until one of the following occurs:
- Scanning Active Time has elapsed
- a label has been read
- the trigger is released

This mode is associated with typical handheld reader operation: when the trigger is pulled, scanning starts and the product scans until the trigger is released, or a label is read, or the maximum Scanning Active Time has elapsed.

Trigger Hold Multiple — When the trigger is pulled, scanning starts and the product scans until the trigger is released or Scanning Active Time has elapsed. Reading a label does not disable scanning. Double Read Timeout prevents undesired multiple reads of the same label while in this mode.

Trigger Pulse Multiple — When the trigger is pulled, continuous scanning is activated until Scanning Active Time has elapsed or the trigger has been released and pulled again. Double Read Timeout[1] prevents undesired multiple reads of the same label while in this mode.

Flashing — The reader flashes[1] on and off regardless of the trigger status. Flash rate is controlled by Flash On Time and Flash Off Time.

Always On — No trigger pull is required to read a barcode. Scanning is continually on. If the trigger is pulled, the reader acts as if it is in Trigger Single Mode. Double Read Timeout[1] prevents undesired multiple reads of the same label while in this mode.

Stand Mode — No trigger pull is required to read a barcode. Scanning is turned on automatically when an item is placed in reader's field of view. If the trigger is pulled, the reader acts as if it in single read mode. Double Read Timeout[1] prevents undesired multiple reads of the same label while in this mode.

Trigger Object Sense — This mode is similar to Stand Mode, except that a trigger pull is required to activate the decoder.

---

[1] Controlled by Flash On Time.

Scan Mode — continued

ENTER/EXIT PROGRAMMING MODE

Scan Mode = Trigger Single	DEFAULT
	Scan Mode = Trigger Hold Multiple
Scan Mode = Trigger Pulse Multiple	
	Scan Mode = Flashing
Scan Mode = Always On	
	Scan Mode = Stand Mode
Scan Mode = Trigger Object Sense	

Stand Mode Triggered Timeout

This feature specifies the time to remain in Trigger Single mode after the trigger is pulled while in Stand Mode.

NOTE **This timeout is only used when the Scan Mode is configured as** Stand Mode.

ENTER/EXIT PROGRAMMING MODE

Stand Mode Triggered Timeout = 0.5 Seconds	DEFAULT
	Stand Mode Triggered Timeout = 1.5 Seconds
Stand Mode Triggered Timeout = 2 Seconds	
	Stand Mode Triggered Timeout = 3 Seconds
Stand Mode Triggered Timeout = 4 Seconds	

Stand Mode Triggered Timeout — continued

ENTER/EXIT PROGRAMMING MODE

Stand Mode Triggered Timeout = 6 Seconds

Stand Mode Triggered Timeout = 8 Seconds

Stand Mode Triggered Timeout = Switch back to Trigger Single on trigger pull

Scanning Active Time

This setting specifies the amount of time that the reader stays in scan ON state once the state is entered. The range for this setting is from 1 to 255 seconds in 1-second increments.

Follow these instructions to set this feature:

1. Determine the desired setting.
2. Pad the result with leading zeroes to yield three digits. For example: 0 = 000, 5 = 005, 20 = 020, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT SCANNING ACTIVE TIME SETTING.
5. Scan the appropriate three digits from the keypad in Appendix E, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 4 for some examples of how to set this feature.

Table 4. Scanning Active Time Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	1 Second	90 Sec. (1.5 min.)	180 Sec. (3 min.)	255 Seconds (4.25 min.)
2	**Pad leading zero(es)**	001	090	180	255
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT SCANNING ACTIVE TIME SETTING**				
5	**Scan Three Characters From** Appendix E, Keypad	‘0’, ‘0’ and ‘1’	‘0’, ‘9’ and ‘0’	‘1’, ‘8’ and ‘0’	‘2’, ‘5’ and ‘5’
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

Scanning Active Time — cont.

ENTER/EXIT PROGRAMMING MODE

Select Scanning Active Time Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT 005 = Scanning is active for 5 Seconds

Flash On Time

This feature specifies the ON time for the indicator LED while in Flash Mode. The selectable range is 100 to 9,900 milliseconds (0.1 to 9.9 seconds), in 100 millisecond increments.

Follow these instructions to set this feature.

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 100 (setting is in 100ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT FLASH ON TIME SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad representing the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 5 for some examples of how to set this feature.

Table 5. Flash On Time Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	500ms	1,000ms (1 sec.)	5200ms (5.2 sec.)	9,900ms (9.9 sec.)
2	Divide by 100 (and pad with leading zeroes to yield two digits)	05	10	52	99
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT FLASH OFF TIME SETTING				
5	Scan Two Characters From Appendix E, Keypad	‘0’ and ‘5’	‘1’ and ‘0’	‘5’ and ‘2’	‘9’ and ‘9’
6	Scan ENTER/EXIT PROGRAMMING MODE				

Flash On Time — cont.

ENTER/EXIT PROGRAMMING MODE

Select Flash ON Time Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT

10 = Flash is ON for 1 Second

Flash Off Time

This feature specifies the OFF time for the indicator LED while in Flash Mode. The selectable range is 100 to 9,900 milliseconds (0.1 to 9.9 seconds), in 100 millisecond increments.

Follow these instructions to set this feature.

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 100 (setting is in 100ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT FLASH OFF TIME SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 6 for some examples of how to set this feature.

Table 6. Flash Off Time Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	500ms	1,000ms (1 sec.)	5200ms (5.2 sec.)	9,900ms (9.9 sec.)
2	Divide by 100 (and pad with leading zeroes to yield two digits)	05	10	52	99
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT FLASH OFF TIME SETTING				
5	Scan Two Characters From Appendix E, Keypad	‘0’ and ‘5’	‘1’ and ‘0’	‘5’ and ‘2’	‘9’ and ‘9’
6	Scan ENTER/EXIT PROGRAMMING MODE				

Flash Off Time — cont.

ENTER/EXIT PROGRAMMING MODE

Select Flash OFF Time Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT 06 = Flash is OFF for 600ms

Stand Mode Sensitivity

Sets the sensitivity level for stand mode wakeup. Choices are low, medium and high.

ENTER/EXIT PROGRAMMING MODE

	Stand Mode Sensitivity = Low
Stand Mode Sensitivity = Medium	DEFAULT
	Stand Mode Sensitivity = High

Laser Pointer Control

NOTE

The Laser Pointer is a value-added option which might not have been included when your reader was ordered.

Specifies the amount of time that the laser pointer is turned on preliminary to scanning. When the trigger is pressed in Trigger Single Mode, the laser pointer will be activated for the time period configured by this feature. Immediately following this, the reader will start scanning.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Laser Pointer Control = 0 msec (No preliminary pointer — i.e. start scanning immediately after trigger)
Laser Pointer Control = 100 msec	
	Laser Pointer Control = 200 msec
Laser Pointer Control = 300 msec	
	Laser Pointer Control = 400 msec
Laser Pointer Control = 500 msec	

Laser Pointer Period

This option specifies the period of the laser pointer blink during scanning. The laser pointer will be activated for the time specified by Laser Pointer Control. then start blinking OFF then ON at 50% duty cycle for the duration set by Laser Pointer Period.

ENTER/EXIT PROGRAMMING MODE

	Laser Pointer Period = Disable
Laser Pointer Period = 500 ms	DEFAULT
	Laser Pointer Period = 1 Second (1,000 ms)
Laser Pointer Period = 1.5 Seconds (1,500 ms)	
	Laser Pointer Period = 2 Seconds (2,000 ms)

Laser Pointer Period — cont.

Laser Pointer Period = 2.5 Seconds (2,500 ms)

Laser Pointer Period = 3 Seconds (3,000 ms)

Laser Pointer Period = 3.5 Seconds (3,500 ms)

Laser Pointer Period = 4 Seconds (4,000 ms)

Laser Pointer Period = 4.5 Seconds (4,500 ms)

Laser Pointer Period = 5 Seconds (5,000 ms)

Green Spot Duration

Specifies the duration of the good read pointer beam after a good read.

ENTER/EXIT PROGRAMMING MODE

	Green Spot Duration = Disable (Green Spot is Off)
Green Spot Duration = Short (300 msec)	⇐ DEFAULT
	Green Spot Duration = Medium (500 msec)
Green Spot Duration = Long (800 msec)	

NOTES

Chapter 5

RS-232 ONLY Interface

Introduction

Use the programming barcodes in this chapter if modifications to the standard RS-232 interface settings are necessary to meet your system's requirements. Additional settings which apply to both the RS-232 and USB interfaces are available in Chapter 6, RS-232/ USB-Com Interfaces.

RS-232 Standard Factory Settings

Reference Appendix B, Standard Defaults for a listing of standard factory settings.

Baud Rate

Baud rate is the number of bits of data transmitted per second. Set the reader's baud rate to match the baud rate setting of the host device. With an improper baud rate setting, data may not reach the host correctly.

ENTER/EXIT PROGRAMMING MODE

	Baud Rate = 1200
Baud Rate = 2400	
	Baud Rate = 4800

Baud Rate — continued

ENTER/EXIT PROGRAMMING MODE

Baud Rate = 9600	DEFAULT
	Baud Rate = 19,200
Baud Rate = 38,400	
	Baud Rate = 57,600
Baud Rate = 115,200	

Data Bits

This parameter allows the reader to interface with devices requiring a 7-bit or 8-bit ASCII protocol for sending and receiving data.

ENTER/EXIT PROGRAMMING MODE

	7 Data Bits
8 Data Bits	DEFAULT

Stop Bits

The stop bit(s) at the end of each transmitted character marks the end of transmission of one character and prepares the receiving device for the next character in the serial data stream. The number of stop bits selected (one or two) depends on the number the receiving terminal is programmed to accommodate. Set the number of stop bits to match host device requirements.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	1 Stop Bit
2 Stop Bits	

Parity

This feature specifies parity required for sending and receiving data. A parity check bit is the most significant bit of each ASCII coded character. Select the parity type according to host device requirements.

- Select None when no parity bit is required.
- Select Odd parity and the parity bit value is set to 0 or 1, based on data, to ensure that an odd number of 1 bits are contained in the coded character.
- Select Even parity and the parity bit value is set to 0 or 1, based on data, to ensure that an even number of 1 bits are contained in the coded character.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Parity = None
Parity = Even	
	Parity = Odd

Handshaking Control

The data interface consists of an RS-232 port designed to operate either with or without the hardware handshaking lines, *Request to Send* (RTS), and *Clear to Send* (CTS). Handshaking Control includes the following options:

- RTS — RTS is asserted during transmissions. CTS is ignored.
- RTS/CTS — RTS is asserted during transmissions. CTS gates transmissions.
- RTS/XON/XOFF — RTS is asserted during transmissions. CTS is ignored. XON and XOFF gate transmissions.
- RTS On/CTS — RTS is always asserted. CTS gates transmissions.
- RTS/CTS Scan Control — RTS is asserted during transmissions. CTS gates transmissions and controls enable and disable state of scanner.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Handshaking Control = RTS
Handshaking Control = RTS/CTS	
	Handshaking Control = RTS/XON/XOFF
Handshaking Control = RTS On/CTS	
	Handshaking Control = RTS/CTS Scan Control

Chapter 6

RS-232/USB-Com Interfaces

Introduction

The programming barcodes in this chapter allow modifications to the standard RS-232 and USB-Com interfaces.

Standard Factory Settings

Reference Appendix B, Standard Defaults for a listing of standard factory settings.

Intercharacter Delay

This parameter specifies the intercharacter delay between the end of one character and the beginning of the next. The delay can be set within a range of zero (0) to 990 milliseconds in 10ms increments. A setting of zero specifies no delay.

To set the delay:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT INTERCHARACTER DELAY SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 7 for some examples of how to set this feature.

Table 7. Intercharacter Delay Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	50ms	150ms	600ms	850ms
2	Divide by 10 (and pad with leading zeroes to yield two-digits)	05	15	60	85
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT INTERCHARACTER DELAY SETTING				
5	Scan Two Characters From Appendix E, Keypad	‘0’ and ‘5’	‘5’ and ‘0’	0’ and ‘0’	‘8’ and ‘5’
6	Scan ENTER/EXIT PROGRAMMING MODE				

Intercharacter Delay — cont.

ENTER/EXIT PROGRAMMING MODE

Intercharacter Delay = No Delay

Select Intercharacter Delay Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

00 = No Intercharacter Delay

Beep On ASCII BEL

When this parameter is enabled, the reader issues a beep when a <BEL> character is detected on the RS-232 serial line. <BEL> is issued to gain a user's attention to an illegal entry or other important event.

ENTER/EXIT PROGRAMMING MODE

Beep On ASCII BEL = Disable	DEFAULT
	Beep On ASCII BEL = Enable

Beep On Not on File

This option enables/disables the action of the reader to sound a three beep sequence upon receiving a Not-On-File (NOF) host command.

ENTER/EXIT PROGRAMMING MODE

Beep On Not On File = Disable	
DEFAULT	Beep On Not On File = Enable

ACK NAK Options

This enables/disables the ability of the reader to support the RS-232 ACK/NAK protocol. When configured, the reader and/or host sends an "ACK" when it receives data properly, and sends "NAK" when the data is in error.

Options are:

- Disable
- Enable for label transmission — The reader expects an ACK/NAK response from the host when a label is sent.
- Enable for host-command acknowledge — The reader will respond with ACK/NAK when the host sends a command.
- Enable for label transmission and host-command acknowledge

ENTER/EXIT PROGRAMMING MODE

DEFAULT	ACK/NAK Protocol = Disable ACK/NAK
ACK/NAK Protocol = Enable for label transmission	
	ACK/NAK Protocol = Enable for host-command acknowledge
ACK/NAK Protocol = Enable for label transmission and host-command acknowledge	

ACK Character

This setting specifies an ASCII character or hex value to be used as the ACK character. ASCII characters or any hex value from 0 to 0xFF can be selected.

NOTE

Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

To set this feature:

1. Determine the desired character or value.
2. Use the ASCII Chart on the inside back cover of this manual to find the hex equivalent for the desired character/value.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT ACK CHARACTER SETTING.
5. Scan the appropriate two alpha-numeric characters from the keypad in Appendix E, Keypad, that represent the desired character/value in step 1 above. The second character will cause a two-beep indication.
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 8 for some examples of how to set this feature.

Table 8. ACK Character Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Character/Value**	ACK	$	@	>
2	**Hex equivalent**	0x06	0x24	0x40	0x3E
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT ACK CHARACTER SETTING**				
5	**Scan Two Characters From** Appendix E, Keypad	‘0’ and ‘6’	‘2’ and ‘4’	‘4’ and ‘0’	‘3’ AND ‘E’
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

ACK Character — cont.

ENTER/EXIT PROGRAMMING MODE

Select ACK Character Setting

DEFAULT

0x06 ‘ACK’ Character

NAK Character

This setting specifies an ASCII character or hex value to be used as the NAK character. ASCII characters or any hex value from 0 to 0xFF can be selected.

NOTE

Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

To set this feature:

1. Determine the desired character or value.
2. Use the ASCII Chart on the inside back cover of this manual to find the hex equivalent for the desired character/value.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT NAK CHARACTER SETTING.
5. Scan the appropriate two alpha-numeric characters from the keypad in Appendix E, Keypad, that represent the desired character/value in step 1 above. The second character will cause a two-beep indication.
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 9 for some examples of how to set this feature.

Table 9. NAK Character Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Character/Value**	NAK	$	@	>
2	**Hex equivalent**	0x15	0x24	0x40	0x3E
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT ACK CHARACTER SETTING**				
5	**Scan Two Characters From** Appendix E, Keypad	‘1’ and ‘5’	‘2’ and ‘4’	‘4’ and ‘0’	‘3’ AND ‘E’
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

NAK Character — cont.

ENTER/EXIT PROGRAMMING MODE

Select NAK Character Setting

DEFAULT

0x15 ‘NAK’ Character

ACK NAK Timeout Value

This option specifies the amount of time the reader waits for an ACK character from the host following label transmission. The selectable timeout range is 200 milliseconds to 15,000ms (15 seconds) in 200ms increments. A selection of 0 disables the timeout.

To set this value:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 200 (setting is in 200ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT ACK NAK TIMEOUT VALUE SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 10 for some examples of how to set this feature.

Table 10. ACK NAK Timeout Value Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	200ms	1,000ms (1 sec.)	5200ms (5.2 sec.)	15,000ms (1 sec.)
2	Divide by 200	01	05	26	75
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT ACK NAK TIMEOUT VALUE SETTING				
5	Scan Two Characters From Appendix E, Keypad	‘0’ and ‘1’	‘0’ and ‘5’	‘2’ and ‘6’	‘7’ and ‘5’
7	Scan ENTER/EXIT PROGRAMMING MODE				

ACK NAK Timeout Value — cont.

ENTER/EXIT PROGRAMMING MODE

Select ACK NAK Timeout Value Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

01 ACK NAK Timeout value is 200ms

ACK NAK Retry Count

This feature specifies the number of times the reader retries a label transmission due to a retry condition. The selectable range is from 1 to 254 retries. A selection of 0 disables the count, and a selection of 255 specifies unlimited retries.

To set this feature:

1. Determine the desired setting.
2. Pad the number with leading zeroes to yield three digits. For example: 0 = 000, 5 = 005, 20 = 020, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT ACK NAK RETRY COUNT SETTING.
5. Scan the appropriate three digits from the keypad in Appendix E, Keypad, that represent the number which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 11 for some examples of how to set this feature.

Table 11. ACK NAK Retry Count Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	Disable Retry Count	3 Retries	54 Retries	Unlimited Retries
2	**Pad with leading zero(es)**	000	003	054	255
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT ACK NAK RETRY COUNT SETTING**				
5	**Scan Three Characters From** Appendix E, Keypad	'0', '0' and '0'	'0', '0' and '3'	'0', '5' and '4'	'2', '5' and '5'
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

ACK NAK Retry Count — cont.

ENTER/EXIT PROGRAMMING MODE

Select ACK NAK Retry Count Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT 003 = 3 Retries

ACK NAK Error Handling

This feature specifies the method the reader uses to handle receive errors detected while waiting for an ACK character from the host.

Options are:

- Ignore errors detected
- Process error as valid ACK character
- Process error as valid NAK character

ENTER/EXIT PROGRAMMING MODE

DEFAULT

ACK NAK Error Handling = Ignore Errors Detected

ACK NAK Error Handling = Process Error as Valid ACK Character

ACK NAK Error Handling = Process Error as Valid NAK Character

Indicate Transmission Failure

This option enables/disables the reader’s ability to sound an error beep to indicate a transmission failure while in ACK/NAK mode.

ENTER/EXIT PROGRAMMING MODE

	Indicate Transmission Failure = Disable Indication
Indicate Transmission Failure = Enable Indication	DEFAULT

Disable Character

Specifies the value of the RS-232 host command used to disable the reader. ASCII characters or any hex value from 0 to 0xFF can be selected.

NOTE

Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

To set the value:

1. Determine the desired character or value. A setting of 0xFF indicates the the Disable Character is not used (not available).
2. Use the ASCII Chart on the inside back cover of this manual to find the hex equivalent for the desired character/value.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT DISABLE CHARACTER SETTING.
5. Scan the appropriate two alpha-numeric characters from the keypad in Appendix E, Keypad, that represent the desired character/value in step 1 above. The second character will cause a two-beep indication.
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 12 for some examples of how to set this feature.

Table 12. Disable Character Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired character/value**	‘d’	‘}’	‘D’	Disable Command Not Used
2	**Hex equivalent**	0x64	0x7D	0x44	0xFF
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT DISABLE CHARACTER VALUE SETTING**				
5	**Scan Two Characters From** Appendix E, Keypad	‘6’ and ‘4’	‘7’ and ‘D’	‘4’ and ‘4’	‘F’ AND ‘F’
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

Disable Character — cont.

ENTER/EXIT PROGRAMMING MODE

Select Disable Character Setting

DEFAULT

0x44 = Disable Character is 'D'

Enable Character

Specifies the value of the RS-232 host command used to enable the reader. ASCII characters or any hex value from 0 to 0xFF can be selected.

NOTE

Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

To set this feature:
Determine the desired character or value. A setting of 0xFF indicates the the Enable Character is not used (not available).

1. Determine the desired character or value.
2. Use the ASCII Chart on the inside back cover of this manual to find the hex equivalent for the desired character/value.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT ENABLE CHARACTER SETTING.
5. Scan the appropriate two alpha-numeric characters from the keypad in Appendix E, Keypad, that represent the desired character/value in step 2 above. The second character will cause a two-beep indication.
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 13 for some examples of how to set this feature.

Table 13. Enable Character Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired character/value**	‘e’	‘}’	‘E’	Enable Command Not Used
2	**Hex equivalent**	0x65	0x7D	0x45	0xFF
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT DISABLE CHARACTER VALUE SETTING**				
5	**Scan Two Characters From** Appendix E, Keypad	‘6’ and ‘5’	‘7’ and ‘D’	‘4’ and ‘5’	‘F’ AND ‘F’
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

Enable Character — cont.

ENTER/EXIT PROGRAMMING MODE

Select Enable Character Setting

DEFAULT 0x45 = Enable Character is ‘E’

NOTES

Chapter 7

Keyboard Interface

Introduction

Use the programming barcodes in this chapter to select options for USB Keyboard and Wedge Interfaces.

Standard Factory Settings

Reference Appendix B, Standard Defaults for a listing of standard factory settings.

Scancode Tables

Information about control character emulation which applies to keyboard interfaces is listed in Appendix F, Scancode Tables.

Country Mode

This feature specifies the country/language supported by the keyboard.
Only the following interfaces support ALL Country Modes.

- USB Keyboard (without alternate key encoding)
- AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Std Key Encoding
- Keyboard Wedge for IBM AT PS2 with standard key encoding but without external keyboard
- AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 without Alternate Key
- Keyboard Wedge for IBM AT PS2 without alternate key encoding but without external keyboard

All other interfaces support ONLY the following Country Modes: U.S., Belgium, Britain, France, Germany, Italy, Spain, Sweden.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Country Mode = U.S.
Country Mode = Belgium	
	Country Mode = Britain
Country Mode = Croatia	Supports only the interfaces listed in theCountry Mode feature description.
Supports only the interfaces listed in theCountry Mode feature description.	Country Mode = Czechoslovakia

Country Mode — continued

ENTER/EXIT PROGRAMMING MODE

Country Mode = Denmark	Supports only the interfaces listed in theCountry Mode feature description.
	Country Mode = France
Country Mode = Germany	
Supports only the interfaces listed in theCountry Mode feature description.	Country Mode = Hungary
Country Mode = Italy	
Supports only the interfaces listed in theCountry Mode feature description.	Country Mode = Japanese 106-key
Country Mode = Norway	Supports only the interfaces listed in theCountry Mode feature description.

Country Mode — continued

ENTER/EXIT PROGRAMMING MODE

Country Mode = Poland	Supports only the interfaces listed in theCountry Mode feature description.
Supports only the interfaces listed in theCountry Mode feature description.	Country Mode = Portugal
Country Mode = Romania	Supports only the interfaces listed in theCountry Mode feature description.
Supports only the interfaces listed in theCountry Mode feature description.	Country Mode = Slovakia
Country Mode = Spain	
	Country Mode = Sweden
Country Mode = Switzerland	Supports only the interfaces listed in theCountry Mode feature description.

Caps Lock State

This option specifies the format in which the reader sends character data. This applies to keyboard wedge interfaces. This does not apply when an alternate key encoding keyboard is selected.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Caps Lock State = Caps Lock OFF
Caps Lock State = Caps Lock ON	
	Caps Lock State = AUTO Caps Lock Enable

Numlock

This option specifies the setting of the Numbers Lock (Numlock) key while in keyboard wedge interface. This only applies to alternate key encoding interfaces. It does not apply to USB keyboard.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Numlock = Numlock key unchanged
Numlock = Numlock key toggled	

Send Control Characters

This feature Specifies how the reader transmits ASCII control characters to the host. Reference Appendix F, Scancode Tables for more information about control characters.

Options are as follows:

Control Character 00 — Characters from 00 to 0x1F are sent as control character Ctrl+Keys, special keys are located from 0x80 to 0xA1.

Control Character 01 — Characters from 00 to 0x1F are sent as control character Ctrl+Capital Key, special keys are located from 0x80 to 0xA1.

Control Character 02 — Special keys are located from 00 to 0x1F and characters from 0x80 to 0xFE are intended as an extended ASCII table (Microsoft Windows Codepage 1252 — see Microsoft Windows Codepage 1252 on page 338).

ENTER/EXIT PROGRAMMING MODE

DEFAULT ➡	Wedge Send Control Characters = 00
Wedge Send Control Characters = 01	
	Wedge Send Control Characters = 02

Wedge Quiet Interval

This option specifies the amount of time to look for keyboard activity before the reader breaks the keyboard connection in order to transmit data to host. The selectable range for this feature is from 0 to 990ms in 10ms increments.

This feature applies ONLY to the Keyboard Wedge interface.

NOTE

Follow these instructions to set this feature:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT WEDGE QUIET INTERVAL SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure to set the Wedge Quiet Interval. See Table 14 for some examples of how to set this feature.

Table 14. Timeout Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	10ms	150ms	600ms	850ms
2	Divide by 10 (and pad with leading zeroes)	01	15	60	85
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT WEDGE QUIET INTERVAL SETTING				
5	Scan Two Characters From Appendix E, Keypad	‘0’ and ‘1’	‘1’ and ‘5’	‘6’ and ‘0’	‘8’ and ‘5’
6	Scan ENTER/EXIT PROGRAMMING MODE				

Wedge Quiet Interval — cont.

ENTER/EXIT PROGRAMMING MODE

Select Wedge Quiet Interval Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

10 = Quiet Interval of 100 ms

Intercharacter Delay

This parameter specifies the intercharacter delay between the end of one character and the beginning of the next. The delay can be set within a range of zero (0) to 990 milliseconds in 10ms increments. A setting of zero specifies no delay.

NOTE

This feature applies ONLY to the Keyboard Wedge interface.

To set the delay:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT INTERCHARACTER DELAY SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 14 for some examples of how to set this feature.

Table 15. Intercharacter Delay Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	50ms	150ms	600ms	850ms
2	Divide by 10 (and pad with leading zeroes to yield two-digits)	05	15	60	85
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT INTERCHARACTER DELAY SETTING				
5	Scan Two Characters From Appendix E, Keypad	‘0’ and ‘5’	‘1’ and ‘5’	‘6’ and ‘0’	‘8’ and ‘5’
6	Scan ENTER/EXIT PROGRAMMING MODE				

Intercharacter Delay — cont.

ENTER/EXIT PROGRAMMING MODE

	Intercharacter Delay = No Delay
Select Intercharacter Delay Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT 00 = No Intercharacter Delay

Intercode Delay

Specifies the delay between labels transmitted to the host for this interface. The selectable range for this feature is from 0 to 99 seconds.

Follow these instructions to set this feature:

1. Determine the desired setting.
2. Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT INTERCODE DELAY SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE **If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.**

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 16 for some examples of how to set this feature.

Table 16. Wedge Intercode Delay Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	No Delay	5 Seconds	60 Seconds	99 Seconds
2	Pad with leading zero(es)	00	05	60	99
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT INTERCODE DELAY SETTING				
5	Scan Two Characters From Appendix E, Keypad	‘0’ and ‘0’	‘0’ and ‘5’	‘6’ and ‘0’	‘9’ AND ‘9’
7	Scan ENTER/EXIT PROGRAMMING MODE				

Intercode Delay — cont.

ENTER/EXIT PROGRAMMING MODE

Set Intercode Delay

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT 00 = No Wedge Intercode Delay

USB Keyboard Speed

This option specifies the USB poll rate for a USB keyboard.

NOTE **This feature applies ONLY to the USB Keyboard interface.**

ENTER/EXIT PROGRAMMING MODE

DEFAULT	USB Keyboard Speed = 1ms
USB Keyboard Speed = 2ms	
	USB Keyboard Speed = 3ms
USB Keyboard Speed = 4ms	
	USB Keyboard Speed = 5ms

USB Keyboard Speed — continued

ENTER/EXIT PROGRAMMING MODE

USB Keyboard Speed = 6ms

USB Keyboard Speed = 7ms

USB Keyboard Speed = 8ms

USB Keyboard Speed = 9ms

USB Keyboard Speed = 10ms

Chapter 8

USB-OEM Interface

Introduction

Feature settings for USB interfaces differ depending upon which host type the reader will be connected with. Use the feature settings in this chapter and Chapter 9, IBM 46XX Interface to specifically configure for the USB-OEM interface. Other USB interfaces are included in the approprite chapter for their host type.

Standard Factory Settings

Reference Appendix B, Standard Defaults for a listing of standard factory settings.

USB-OEM Device Usage

The USB-OEM protocol allows for the reader to be identified as one of two different types of barcode scanners. Depending on what other scanners you may already have connected to a USB-OEM POS, you may need to change this setting to enable all devices to communicate.

Options are:

- Table Top Scanner
- Handheld Scanner

NOTE

It may be necessary to switch device usage when connecting two readers/scanners of the same type to a POS system.

ENTER/EXIT PROGRAMMING MODE

USB-OEM Device Usage = Table Top Scanner

USB-OEM Device Usage = Handheld Scanner

DEFAULT

Chapter 9

IBM 46XX Interface

Introduction

Use the barcodes in this section to configure programmable features for available IBM 46XX interfaces.

IBM Standard Factory Settings

Reference Appendix B, Standard Defaults for a listing of standard factory settings.

46xx Number of Host Resets

Specifies how many consecutive resets are processed before the reader starts a five-second period to allow the user to enter Programming Mode and configure the reader. The configurable range for this feature is 1 to 15 resets.

ENTER/EXIT PROGRAMMING MODE

	46xx Number of Host Resets = 1
46xx Number of Host Resets = 2	
	46xx Number of Host Resets = 3
46xx Number of Host Resets = 4	
	46xx Number of Host Resets = 5
46xx Number of Host Resets = 6	DEFAULT

46xx Number of Host Resets — cont.

ENTER/EXIT PROGRAMMING MODE

46xx Number of Host Resets = 7

46xx Number of Host Resets = 8

46xx Number of Host Resets = 9

46xx Number of Host Resets = 10

46xx Number of Host Resets = 11

46xx Number of Host Resets = 12

46xx Number of Host Resets — cont.

ENTER/EXIT PROGRAMMING MODE

	46xx Number of Host Resets = 13
46xx Number of Host Resets = 14	
	46xx Number of Host Resets = 15

Transmit Labels in Code 39 Format

This feature enable/disables translation to Code 39 before transmitting label data to an IBM-46XX or a USB-OEM host. Only the symbology identifier is modified for the translation. The data is not converted to Code 39 or verified to be valid for Code 39.

Options are:

IBM Standard Format — Send labels in standard IBM format.

Code 39 Format — Translate the following symbologies to Code 39:

- USB-OEM: Code128, Code 93, and Codabar
- IBM-Port 5B: Code 128, Code 93, and Codabar
- IBM-Port 9B: Code 93 and Codabar

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Transmit Labels in Code 39 Format = IBM Standard Format
Transmit Labels in Code 39 Format = Code 39 Format	

NOTES

Chapter 10

Data Editing

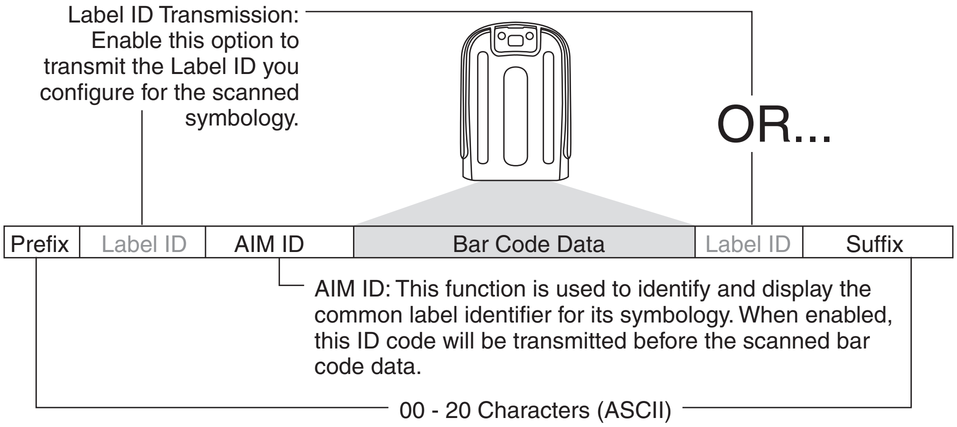
Data Editing Overview

CAUTION **It is not recommended to use these features with IBM interfaces.**

When a barcode is scanned, additional information can be sent to the host computer along with the barcode data. This combination of barcode data and supplementary user-defined data is called a “message string.” The features in this chapter can be used to build specific user-defined data into a message string.

There are several types of selectable data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. Figure 4 shows the available elements you can add to a message string:

Figure 4. Breakdown of a Message String


Label ID Transmission: Enable this option to transmit the Label ID you configure for the scanned symbology.
OR...
Prefix
Label ID
AIM ID
Bar Code Data
Label ID
Suffix
AIM ID: This function is used to identify and display the common label identifier for its symbology. When enabled, this ID code will be transmitted before the scanned bar code data.
00 - 20 Characters (ASCII)

NOTE **Additional advanced editing is available. Contact** Technical Support on page 3 **for more information.**

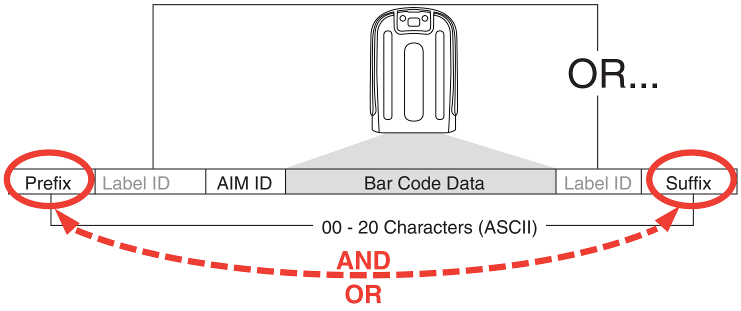
Please Keep In Mind...

- Modifying a message string is not a mandatory requirement. Data editing is sophisticated feature allowing highly customizable output for advanced users. Factory default settings for data editing is typically set to NONE.
- A prefix or suffix may be applied (reference the Symbologies chapter for these settings) across all symbologies (set via the Global features in this chapter).
- You can add any character from the ASCII Chart (from 00-FF) on the inside back cover of this manual as a prefix, suffix or Label ID.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.

Global Prefix/Suffix

Up to 20 ASCII characters may be added as a prefix (in a position before the barcode data) and/or as a suffix (in a position following the barcode data) as indicated in Figure 5.

Figure 5. Prefix and Suffix Positions



Example: Setting a Prefix

In this example, we'll set a prefix for all symbologies.

1. Determine which ASCII character(s) are to be added to scanned barcode data. In this example, we'll add a dollar sign ('$') as a prefix.
2. Scan the ENTER/EXIT barcode.
3. Scan the SET GLOBAL PREFIX barcode.
4. Reference the ASCII Chart on the inside back cover of this manual, to find the hex value assigned to the desired character. The corresponding hex number for the '$' character is 24. To enter this selection code, scan the '2' and '4' barcodes from Appendix E, Keypad.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

5. If less than the expected string of 20 characters are selected, scan the ENTER/EXIT barcode to terminate the string.

6. Scan the ENTER/EXIT barcode once again to exit Programming Mode.
7. The resulting message string would appear as follows:

   Scanned barcode data:12345

   Resulting message string output: $12345

This option sets up to 20 characters each from the set of ASCII characters or any hex value from 00 to FF. To configure this feature, scan the ENTER/EXIT barcode to place the unit in Programming Mode, then the "Set Global Prefix" or "Set Global Suffix," barcode followed by the digits (in hex) from the Alphanumeric characters in Appendix E, Keypad representing your desired character(s). If less than the expected string of 20 characters are selected, scan the ENTER/EXIT barcode to terminate the string. Reference the section, Example: Setting a Prefix on page 96, for more information. Exit programming mode by scanning the ENTER/EXIT barcode once again.

ENTER/EXIT PROGRAMMING MODE

Set Global Prefix

Set Global Suffix

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

No Global Prefix
Global Suffix = 0x0D (CR)

Global AIM ID

NOTE

This feature enables/disables addition of AIM IDs for all symbology types.

AIM label identifiers (as opposed to custom characters you select yourself as with label identifiers) can be included with scanned barcode data. AIM label identifiers consist of three characters as follows:

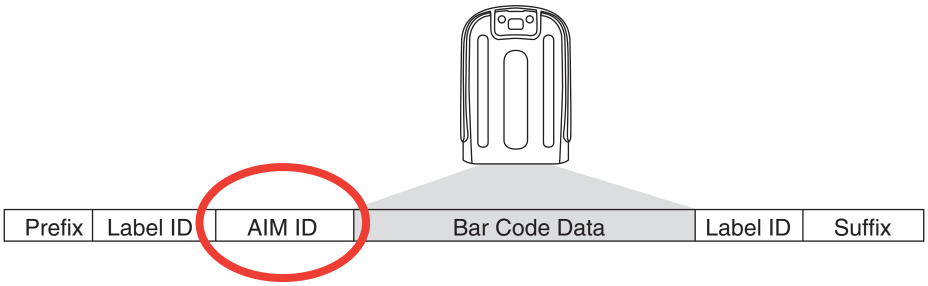
- A close brace character (ASCII ‘]’), followed by...
- A code character (see the table below), followed by...
- A modifier character (the modifier character is symbol dependent).

SYMBOLOGY	CHAR	SYMBOLOGY	CHAR
UPC/EAN	E[a]	Code 128/GS1-128	C
Code 39 and Code 32	A	GS1 DataBar Omnidirectional, GS1 DataBar Expanded	e
Codabar	F	Standard 2 of 5	S
Interleaved 2 of 5	I	ISBN	X[b]
Code 93	G	Code 11	H

[a] UPC-A and UPC-E labels are converted to EAN 13 when adding AIM IDs.

[b] ISBN (X with a 0 modifier character)

Figure 6. AIM ID



Global AIM ID — continued

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Global AIM ID = Disable
Global AIM ID = Enable	

GS1-128 AIM ID

If Global AIM ID is disabled, the AIM ID for GS1-128 can be enabled/disabled independently. The AIM ID for GS1-128 is a]C1,]C2 or]C3.
AIM IDs for other symbologies can be enabled/disabled independently as well. Contact Customer Support for assistance.

ENTER/EXIT PROGRAMMING MODE

	GS1-128 AIM ID = Disable
GS1-128 AIM ID = Enable	DEFAULT

Label ID

A Label ID is a customizable code of up to three ASCII characters (each can be one of hex 0x01-0xFF), used to identify a barcode (symbology) type. It can be appended previous to or following the transmitted barcode data depending upon how this option is enabled. This feature provides options for configuring custom Label IDs as a pre-loaded set (see Label ID: Pre-loaded Sets on page 101) or individually per symbology (see Label ID: Set Individually Per Symbology on page 103). If you wish to program the reader to always include an industry standard label identifier for ALL symbology types, see the previous feature Global AIM ID on page 98.

Label ID: Pre-loaded Sets

The reader supports two pre-loaded sets of Label IDs. Table 17 shows the default set and alternate set.

CAUTION

When changing from one Label ID set to another, all other reader configuration settings, including the host interface type, will be erased and set to the standard factory defaults. Any customized configuration will be lost.

ENTER/EXIT PROGRAMMING MODE

DEFAULT

Label ID Pre-loaded Set = Return to Default Set

Label ID Pre-loaded Set = Alternate Set

Table 17. Label ID Pre-loaded Sets

Symbology	Default Label ID set		Alternate Label ID set	
	ASCII character	Hexidecimal value	ASCII character	Hexidecimal value
CODABAR	%	250000	R	520000
CODE11	CE	434500	b	620000

Symbology	Default Label ID set		Alternate Label ID set	
CODE128	#	230000	T	540000
CODE39	*	2A0000	V	560000
CODE4	4	340000	4	340000
CODE5	j	6A0000	j	6A0000
CODE93	&	260000	U	550000
GS1 DATABAR OMNIDIRECTIONAL	R4	523400	u	750000
GS1 DATABAR EXPANDED	RX	525800	t	740000
GS1 DATABAR LIMITED	RL	524C00	v	760000
DATALOGIC 2OF5	s	730000	s	730000
GS1-128		000000	k	6B0000
EAN13	F	460000	B	420000
EAN13 P2	F	460000	L	4C0000
EAN13 P5	F	460000	M	4D0000
EAN13 P8	F	460000	#	230000
EAN8	FF	464600	A	410000
EAN8 P2	FF	464600	J	4A0000
EAN8 P5	FF	464600	K	4B0000
EAN8 P8	FF	464600	*	2A0000
FOLLETT 2OF5	O	4F0000	O	4F0000
GTIN	G	470000	$A	244100
GTIN2	G2	473200	$B	244200
GTIN5	G5	473500	$C	244300
GTIN8	G8	473800	$D	244400
I2OF5	i	690000	N	4E0000
ISBN	I	490000	@	400000
ISBT128	f	660000	f	660000
CODE32	A	410000	X	580000
S25	s	730000	P	500000
UPCA	A	410000	C	430000
UPCA P2	A	410000	F	460000
UPCA P5	A	410000	G	470000
UPCA P8	A	410000	Q	510000

Label ID: Set Individually Per Symbology

To configure a Label ID individually for a single symbology:

1. Scan the ENTER/EXIT barcode.
2. Select Label ID position as either BEFORE (Enable as Prefix) or AFTER (Enable as suffix) by scanning the appropriate barcode in the section Label ID Control on page 105. Reference Figure 7 for Label ID positioning options if multiple identification features are enabled.
3. Scan a barcode to select the symbology for which you wish to configure a custom Label ID from the section Label ID Symbology Selection, starting on page 106.
4. Determine the desired character(s) (you may choose up to three) which will represent the Label ID for the selected symbology.
5. Turn to the ASCII Chart on the inside back cover of this manual and find the equivalent hex digits associated with your choice of Label ID. For example, if you wish to select an equal sign (=) as a Label ID, the chart indicates its associated hex characters as 3D. Turn to Keypad, starting on page 323 and scan the barcodes representing the hex characters determined. For the example given, the characters '3' and 'D' would be scanned. More examples of Label ID settings are provided in Table 18.

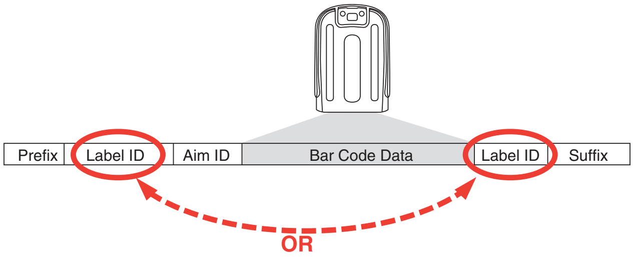
NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT barcode to exit Label ID entry.
7. Scan the ENTER/EXIT barcode once again to exit Programming Mode.

This completes the steps to configure a Label ID for a given symbology.

Figure 7. Label ID Position Options



Label ID — continued

Table 18. Label ID Examples

STEP	ACTION	EXAMPLES			
1.	**Scan the ENTER/EXIT barcode**	(Scanner enters Programming Mode)			
2.	**Determine placement of the Label ID characters BEFORE or AFTER with regard to scanned data using** Label ID Control on page 105	Enable as Prefix	Enable as Suffix	Enable as Prefix	Enable as Suffix
3.	**Scan the barcode selecting the symbology type you wish to designate label ID characters for using** Label ID Symbology Selection, starting on page 106.	GS1 DataBar Omnidirectional	Code 39	Interleaved 2 of 5	Code 32
4.	**Custom Label ID example (desired characters):**	D B *	= C 3	+	P H
5.	**Find hex equivalents from the ASCII table (inside back cover), then scan in these digits/ characters using the barcodes in the section:** Keypad, starting on page 323. **f you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.**	44 42 2A	3D 43 33	2B	50 48
6.	**Scan theENTER/EXIT barcode**	(Scanner exits Label ID entry)			
7.	**Scan the ENTER/EXIT barcode once again**	(Scanner exits Programming Mode)			
Result:		DB*[barcode data]	[barcode data]=C3	+[barcode data]	[barcode data]PH

Label ID — continued

Label ID Control

This option controls whether a Label ID is disabled, or sent as a prefix or suffix for a given symbology type.

ENTER/EXIT PROGRAMMING MODE

DEFAULT

Label ID Transmission = Disable

Label ID Transmission = Enable as Prefix

Label ID Transmission = Enable as Suffix

CANCEL

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

Label ID — continued

Label ID Symbology Selection

This option selects the symbology for which a Label ID is to be configured. See Label ID on page 101 for full instructions.

ENTER/EXIT PROGRAMMING MODE

	Set UPC-A Label ID Character(s)
Set UPC-A/P2 Label ID Character(s)	
	Set UPC-A/P5 Label ID Character(s)
Set UPC-A/GS1-128 Label ID Character(s)	
	Set UPC-E Label ID Character(s)
Set UPC-E/P2 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See Label ID on page 101 for full instructions.

ENTER/EXIT PROGRAMMING MODE

	Set UPC-E/P5 Label ID Character(s)
Set UPC-E/GS1-128 Label ID Character(s)	
	Set EAN 13 Label ID Character(s)
Set EAN 13/P2 Label ID Character(s)	
	Set EAN 13/P5 Label ID Character(s)
Set EAN 13/GS1-128 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See Label ID on page 101 for full instructions.

ENTER/EXIT PROGRAMMING MODE

	Set EAN 8 Label ID Character(s)
Set EAN 8/P2 Label ID Character(s)	
	Set EAN 8/P5 Label ID Character(s)
Set EAN 8/GS1-128 Label ID Character(s)	
	Set GTIN Label ID Character(s)
Set GTIN/P2 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See Label ID on page 101 for full instructions.

ENTER/EXIT PROGRAMMING MODE

	Set GTIN/P5 Label ID Character(s)
Set GTIN/GS1-128 Label ID Character(s)	
	Set GS1 DataBar Omnidirectional Label ID Character(s)
Set GS1 DataBar Expanded Label ID Character(s)	
	Set GS1 DataBar Limited Label ID Character(s)
Set Code 39 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See Label ID on page 101 for full instructions.

ENTER/EXIT PROGRAMMING MODE

Set Code 32 Label ID Character(s)	
	Set Code 128 Label ID Character(s)
Set ISBT 128 Label ID Character(s)	
	Set GS1-128 Label ID Character(s)
Set Interleaved 2 of 5 Label ID Character(s)	
	Set Codabar Label ID Character(s)
Set Code 11 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See Label ID on page 101 for full instructions.

ENTER/EXIT PROGRAMMING MODE

Set Standard 2 of 5 Label ID Character(s)	
	Set Code 4 Label ID Character(s)
Set Code 5 Label ID Character(s)	
	Set Follett 2 of 5 Label ID Character(s)

Case Conversion

This feature allows conversion of the case of all alphabetic characters to upper or lower case.

NOTE

Case conversion affects ONLY scanned barcode data, and does not affect Label ID, Prefix, Suffix, or other appended data.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Case Conversion = Disable (no case conversion)
Case Conversion = Convert to upper case	
	Case Conversion = Convert to lower case

Character Conversion

Character conversion is an eight byte configuration item. The eight bytes are 4 character pairs represented in hexadecimal ASCII values. The first character in the pair is the character that will be converted. The second character in the pair is the character to convert to. If the character to convert in a pair is FF, then no conversion is done.

For example, if you have the character conversion configuration item set to the following: 41423132FFFFFFFF

The first pair is 4142 or AB (41 hex is an ASCII capital A, 42 hex is an ASCII capital B) and the second pair is 3132 or 12 (31 hex is an ASCII 1, 32 is an ASCII 2). The other two pairs are FFFF and FFFF.

With the label, AB12BA21, it would look as follows after the character conversion: BB22BB22.

The A characters were converted to B characters and the 1 characters were converted to 2 characters. Nothing is done with the last two character pairs, since they are all FF.

To set Character Conversion:

1. Scan the ENTER/EXIT barcode.
2. Scan the "Configure Character Conversion" barcode.
3. Determine the desired string. Sixteen positions must be determined as in the above example. Next, turn to the ASCII Chart on the inside back cover of this manual and find the equivalent hex digits needed to fulfill the string.
4. Turn to Appendix E, Keypad and scan the barcodes representing the hex characters determined in the previous step.
5. Scan the ENTER/EXIT barcode to exit Programming Mode.

NOTE

If less than the expected string of 16 characters are selected, scan the ENTER/EXIT barcode twice to accept the selections and exit Programming Mode.

Character Conversion — continued

ENTER/EXIT PROGRAMMING MODE

Configure Character Conversion

DEFAULT

0xFFFFFFFFFFFFFFFF
(No character conversion)

Chapter 11

Symbologies

Introduction

The reader supports the following symbologies (barcode types). Options for each symbology are included in this chapter.

1D Symbologies

- UPC-A
- UPC-E
- EAN 13 (JAN 13)
- EAN 8 (JAN 8)
- GS1 DataBar Omnidirectional
- GS1 DataBar Expanded
- GS1 DataBar Limited
- Code 39
- Code 32
- Code 128
- GS1-128
- Interleaved 2 of 5 (I 2 of 5)
- Datalogic 2 of 5
- Codabar
- Code 11
- Standard 2 of 5
- ISBT 128
- Code 4
- Code 5
- Follett 2 of 5

Standard Factory Settings for Symbologies

Default settings are indicated at each feature/option with a green arrow. Also reference Appendix B, Standard Defaults for a listing of the most widely used set of standard factory settings. That section also provides space to record any custom settings needed or implemented for your system.

Coupon Control

This feature is used to control the method of processing coupon labels.

Options are:

- Disable coupon decoding
- Enable UPC-A coupon decoding
- Enable GS1 DataBar coupon decoding

To set this feature:

1. Scan the SWITCH bar code.
2. Scan either the enable or disable bar code below. You'll need to cover any unused barcodes on this and the facing page to ensure that the reader sees only the barcode you intend to scan.
3. Complete the programming sequence by scanning the SWITCH barcode.

ENTER/EXIT PROGRAMMING MODE

Coupon Control = Disable

Coupon Control = Enable UPC-A coupon decoding

DEFAULT

Coupon Control = Enable GS1 DataBar coupon decoding

UPC-A

The following options apply to the UPC-A symbology.

UPC-A Enable/Disable

When disabled, the reader will not read UPC-A barcodes.

ENTER/EXIT PROGRAMMING MODE

UPC-A = Disable

UPC-A = Enable

DEFAULT

UPC-A Check Character Transmission

Enable this option to transmit the check character along with UPC-A barcode data.

ENTER/EXIT PROGRAMMING MODE

UPC-A Check Character Transmission = Don't Send

UPC-A Check Character Transmission = Send

DEFAULT

UPC-A — cont.

Expand UPC-A to EAN-13

Expands UPC-A data to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	UPC-A to EAN-13 = Don't Expand
UPC-A to EAN-13 = Expand	

UPC-A Number System Character Transmission

This feature enables/disables transmission of the UPC-A number system character.

ENTER/EXIT PROGRAMMING MODE

	UPC-A Number System Character = Do not transmit
UPC-A Number System Character = Transmit	DEFAULT

UPC-A — cont.

In-Store Minimum Reads

This feature specifies the minimum number of consecutive times an in-store label must be decoded before it is accepted as good read.

In-store labels are defined as UPC-A labels with a number-system character of 2 or 4 as well as EAN 8 and EAN 13 labels with a Flag1 character of 2 or an EAN 13 label starting with the three characters '980'.

ENTER/EXIT PROGRAMMING MODE

	In-Store Minimum Reads = 1
In-Store Minimum Reads = 2	DEFAULT
	In-Store Minimum Reads = 3
In-Store Minimum Reads = 4	

UPC-E

The following options apply to the UPC-E symbology.

UPC-E Enable/Disable

When disabled, the reader will not read UPC-E barcodes.

ENTER/EXIT PROGRAMMING MODE

	UPC-E = Disable
UPC-E = Enable	DEFAULT

UPC-E Check Character Transmission

Enable this option to transmit the check character along with UPC-E barcode data.

ENTER/EXIT PROGRAMMING MODE

	UPC-E Check Character Transmission = Don’t Send
UPC-E Check Character Transmission = Send	DEFAULT

UPC-E — cont.

Expand UPC-E to EAN-13

Expands UPC-E data to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	UPC-E to EAN-13 = Don't Expand
UPC-E to EAN-13 = Expand	

Expand UPC-E to UPC-A

Expands UPC-E data to the UPC-A data format.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	UPC-E to UPC-A = Don't Expand
UPC-E to UPC-A = Expand	

UPC-E — cont.

UPC-E Number System Character Transmission

This feature enables/disables transmission of the UPC-E system number character.

ENTER/EXIT PROGRAMMING MODE

	UPC-E Number System Character = Do not transmit
UPC-E Number System Character = Transmit	DEFAULT

UPC-E — cont.

UPC-E Minimum Reads

This feature specifies the minimum number of consecutive times a UPC-E label must be decoded before it is accepted as good read..

ENTER/EXIT PROGRAMMING MODE

	UPC-E Minimum Reads = 1
UPC-E Minimum Reads = 2	DEFAULT
	UPC-E Minimum Reads = 3
UPC-E Minimum Reads = 4	

GTIN Formatting

This feature enables/disables the ability to convert UPC-E, UPC-A, EAN 8, and EAN 13 labels into the GTIN 14-character format.

NOTE

If add-on information is present on the base label prior to the conversion taking place, the addon information will be appended to the converted GTIN label.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GTIN Formatting = Disable
GTIN Formatting = Enable	

EAN 13

The following options apply to the EAN 13 (Jan 13) symbology.

EAN 13 Enable/Disable

When disabled, the reader will not read EAN 13/JAN 13 barcodes.

ENTER/EXIT PROGRAMMING MODE

	EAN 13 = Disable
EAN 13 = Enable	DEFAULT

EAN 13 Check Character Transmission

Enable this option to transmit the check character along with EAN 13 barcode data.

ENTER/EXIT PROGRAMMING MODE

	EAN 13 Check Character Transmission = Don't Send
EAN 13 Check Character Transmission = Send	DEFAULT

EAN 13 — cont.

EAN-13 Flag 1 Character

Enables/disables transmission of an EAN/JAN13 Flag1 character. The Flag 1 character is the first character of the label.

ENTER/EXIT PROGRAMMING MODE

	EAN-13 Flag 1 Char= Don't transmit
EAN-13 Flag 1 Char= Transmit	DEFAULT

EAN-13 ISBN Conversion

This option enables/disables conversion of EAN 13/JAN 13 Bookland labels starting with 978 to ISBN labels.

ENTER/EXIT PROGRAMMING MODE

DEFAULT

EAN-13 ISBN Conversion = Disable

EAN-13 ISBN Conversion = Convert to ISBN

EAN 13 — cont.

EAN 13 Minimum Reads

This feature specifies the minimum number of consecutive times an EAN 13 label must be decoded before it is accepted as good read..

ENTER/EXIT PROGRAMMING MODE

DEFAULT	EAN 13 Minimum Reads = 1
EAN 13 Minimum Reads = 2	
	EAN 13 Minimum Reads = 3
EAN 13 Minimum Reads = 4	

EAN 8

The following options apply to the EAN 8 (Jan 8) symbology.

EAN 8 Enable/Disable

When disabled, the reader will not read EAN 8/JAN 8 barcodes.

ENTER/EXIT PROGRAMMING MODE

EAN 8 = Disable

EAN 8 = Enable

DEFAULT

EAN 8 Check Character Transmission

Enable this option to transmit the check character along with EAN 8 barcode data.

ENTER/EXIT PROGRAMMING MODE

EAN 8 Check Character Transmission = Don’t Send

EAN 8 Check Character Transmission = Send

DEFAULT

EAN 8 — cont.

Expand EAN 8 to EAN 13

Enable this option to expand EAN 8/JAN 8 labels to EAN 13/JAN 13.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Expand EAN 8 to EAN 13 = Disable
Expand EAN 8 to EAN 13 = Enable	

EAN 8 — cont.

EAN 8 Minimum Reads

This feature specifies the minimum number of consecutive times an EAN 8 (Jan 8) label must be decoded before it is accepted as good read..

ENTER/EXIT PROGRAMMING MODE

DEFAULT	EAN 8 Minimum Reads = 1
EAN 8 Minimum Reads = 2	
	EAN 8 Minimum Reads = 3
EAN 8 Minimum Reads = 4	

UPC/EAN Global Settings

This section provides configuration settings for UPC-A, UPC-E, EAN 13 and EAN 8 symbologies, and affects all of these unless otherwise marked for each feature description.

UPC/EAN Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

UPC/EAN Global Settings — cont.

UPC/EAN Decoding Level — cont.

ENTER/EXIT PROGRAMMING MODE

UPC/EAN Decoding Level = 1	
DEFAULT	UPC/EAN Decoding Level = 2
UPC/EAN Decoding Level = 3	
	UPC/EAN Decoding Level = 4
UPC/EAN Decoding Level = 5	

UPC/EAN Global Settings — cont.

UPC/EAN Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	UPC/EAN Correlation = Disable
UPC/EAN Correlation = Enable	

UPC/EAN Reconstruction

This option enables/disables character reconstruction for UPC/EAN labels.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	UPC/EAN Reconstruction = Disable
UPC/EAN Reconstruction = Enable	

UPC/EAN Global Settings — cont.

UPC/EAN Price Weight Check

This feature enables/disables calculation and verification of price/weight check digits. Options are

- Disabled
- Enable 4-digit price-weight check-digit calculation
- Enable 5-digit price-weight check-digit calculation
- Enable European 4-digit price-weight check-digit calculation
- Enable European 5-digit price-weight check-digit calculation

ENTER/EXIT PROGRAMMING MODE

DEFAULT

Price Weight Check = Disabled

Price Weight Check = 4-digit price-weight check

Price Weight Check = 5-digit price-weight check

Price Weight Check = European 4-digit price-weight check

Price Weight Check = European 5-digit price-weight check

UPC/EAN Global Settings — cont.

UPC-A Minimum Reads

This feature specifies the minimum number of consecutive times a UPC-A label must be decoded before it is accepted as good read..

ENTER/EXIT PROGRAMMING MODE

DEFAULT	UPC-A Minimum Reads = 1
UPC-A Minimum Reads = 2	
	UPC-A Minimum Reads = 3
UPC-A Minimum Reads = 4	

Add-Ons

The following features apply to optional add-ons.

NOTE

Contact Customer Support for advanced programming of optional and conditional add-ons.

Optional Add-ons

The reader can be enabled to optionally read the following add-ons (supplementals):

- P2
- P5
- GS1-128

NOTE

If a UPC/EAN base label and a an add-on are both decoded, the reader will transmit the base label and add-on. If a UPC/EAN base label is decoded without an add-on, the base label will be transmitted without an add-on.

Conditional add-on settings (if enabled) are considered by the reader before optional add-on settings.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Optional Add-Ons = Disable P2
Optional Add-Ons = Enable P2	
DEFAULT	Optional Add-Ons = Disable P5

Add-Ons — cont.

Optional Add-ons — cont.

ENTER/EXIT PROGRAMMING MODE

Optional Add-Ons = Enable P5	
DEFAULT	Optional Add-Ons = Disable GS1-128
Optional Add-Ons = Enable GS1-128	

Add-Ons — cont.

Optional Add-On Timer

This option sets the time the reader will look for an add-on when an add-on fragment has been seen and optional add-ons are enabled. (Also see Optional GS1-128 Add-On Timer on page 142.)

ENTER/EXIT PROGRAMMING MODE

Optional Add-on Timer = 10ms

Optional Add-on Timer = 20ms

Optional Add-on Timer = 30ms

Optional Add-on Timer = 40ms

Optional Add-on Timer = 50ms

Add-Ons — cont.

Optional Add-On Timer — cont.

ENTER/EXIT PROGRAMMING MODE

	Optional Add-on Timer = 60ms
Optional Add-on Timer = 70ms	DEFAULT
	Optional Add-on Timer = 100ms
Optional Add-on Timer = 120ms	
	Optional Add-on Timer = 140ms
Optional Add-on Timer = 160ms	

Add-Ons — cont.

Optional Add-On Timer — cont.

ENTER/EXIT PROGRAMMING MODE

Optional Add-on Timer = 180ms

Optional Add-on Timer = 200ms

Optional Add-on Timer = 220ms

Optional Add-on Timer = 240ms

Optional Add-on Timer = 260ms

Optional Add-on Timer = 280ms

Optional Add-on Timer = 300ms

Add-Ons — cont.

Optional GS1-128 Add-On Timer

This option sets the timer expiration value to read the added part after reading the linear EAN/UPC part. For UPC/EAN add-ons other than those of that type, see Optional Add-On Timer on page 139.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Optional GS1-128 Add-On Timer = Disable
Optional GS1-128 Add-On Timer = 10ms	
	Optional GS1-128 Add-On Timer = 20ms
Optional GS1-128 Add-On Timer = 30ms	
	Optional GS1-128 Add-On Timer = 40ms
Optional GS1-128 Add-On Timer = 50ms	

Add-Ons — cont.

Optional GS1-128 Add-On Timer — cont.

ENTER/EXIT PROGRAMMING MODE

Optional GS1-128 Add-On Timer = 60ms

Optional GS1-128 Add-On Timer = 70ms

Optional GS1-128 Add-On Timer = 100ms

Optional GS1-128 Add-On Timer = 120ms

Optional GS1-128 Add-On Timer = 140ms

Optional GS1-128 Add-On Timer = 160ms

Add-Ons — cont.

Optional GS1-128 Add-On Timer — cont.

ENTER/EXIT PROGRAMMING MODE

Optional GS1-128 Add-On Timer = 180ms

Optional GS1-128 Add-On Timer = 200ms

Optional GS1-128 Add-On Timer = 220ms

Optional GS1-128 Add-On Timer = 240ms

Optional GS1-128 Add-On Timer = 260ms

Optional GS1-128 Add-On Timer = 280ms

Optional GS1-128 Add-On Timer = 300ms

Add-Ons — cont.

P2 Add-Ons Minimum Reads

This feature specifies the minimum number of times a P2 add-on must be read before it is marked as valid and then combined with a base label.

ENTER/EXIT PROGRAMMING MODE

	P2 Add-Ons Minimum Reads = 1
P2 Add-Ons Minimum Reads = 2	DEFAULT
	P2 Add-Ons Minimum Reads = 3
P2 Add-Ons Minimum Reads = 4	

Add-Ons — cont.

P5 Add-Ons Minimum Reads

This feature specifies the minimum number of times a P5 add-on must be read before it is marked as valid and then combined with a base label.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	P5 Add-Ons Minimum Reads = 1
P5 Add-Ons Minimum Reads = 2	
	P5 Add-Ons Minimum Reads = 3
P5 Add-Ons Minimum Reads = 4	

Add-Ons — cont.

GS1-128 Add-Ons Minimum Reads

This feature specifies the minimum number of times an GS1-128 add-on must be read before it is marked as valid and then combined with a base label.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GS1-128 Add-Ons Minimum Reads = 1
GS1-128 Add-Ons Minimum Reads = 2	
	GS1-128 Add-Ons Minimum Reads = 3
GS1-128 Add-Ons Minimum Reads = 4	

GS1 DataBar Omnidirectional

The following options apply to the GS1 DataBar Omnidirectional (formerly RSS-14) symbology.

GS1 DataBar Omnidirectional Enable/Disable

When disabled, the reader will not read GS1 DataBar Omnidirectional barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GS1 DataBar Omnidirectional = Disable
GS1 DataBar Omnidirectional = Enable	

GS1 DataBar Omnidirectional GS1-128 Emulation

When enabled, GS1 DataBar Omnidirectional barcodes will be translated to the GS1-128 label data format.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GS1 DataBar Omnidirectional GS1-128 Emulation = Disable
GS1 DataBar Omnidirectional GS1-128 Emulation = Enable	

GS1 DataBar Omnidirectional — cont.

GS1 DataBar Omnidirectional Minimum Reads

This feature specifies the minimum number of consecutive times a GS1 DataBar Omnidirectional label must be decoded before it is accepted as good read.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GS1 DataBar Omnidirectional Minimum Reads = 1
GS1 DataBar Omnidirectional Minimum Reads = 2	
	GS1 DataBar Omnidirectional Minimum Reads = 3
GS1 DataBar Omnidirectional Minimum Reads = 4	

GS1 DataBar Expanded

The following options apply to the GS1 DataBar Expanded (formerly RSS Expanded) symbology.

GS1 DataBar Expanded Enable/Disable

When disabled, the reader will not read GS1 DataBar Expanded barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT

GS1 DataBar Expanded = Disable

GS1 DataBar Expanded = Enable

GS1 DataBar Expanded GS1-128 Emulation

When enabled, GS1 DataBar Expanded barcodes will be translated to the GS1-128 label data format.

ENTER/EXIT PROGRAMMING MODE

DEFAULT

GS1 DataBar Expanded GS1-128 Emulation = Disable

GS1 DataBar Expanded GS1-128 Emulation = Enable

GS1 DataBar Expanded — cont.

GS1 DataBar Expanded Minimum Reads

This feature specifies the minimum number of consecutive times a GS1 DataBar Expanded label must be decoded before it is accepted as good read.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GS1 DataBar Expanded Minimum Reads = 1
GS1 DataBar Expanded Minimum Reads = 2	
	GS1 DataBar Expanded Minimum Reads = 3
GS1 DataBar Expanded Minimum Reads = 4	

GS1 DataBar Expanded — cont.

GS1 DataBar Expanded Length Control

This feature specifies either variable length decoding or fixed length decoding for the GS1 DataBar Expanded symbology.

Variable Length — For variable-length decoding, a minimum length may be set.

Fixed Length — For fixed-length decoding, two different lengths may be set.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GS1 DataBar Expanded Length Control = Variable Length
GS1 DataBar Expanded Length Control = Fixed Length	

GS1 DataBar Expanded — cont.

GS1 DataBar Expanded Set Length 1

This feature specifies one of the barcode lengths for GS1 DataBar Expanded Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the barcode's data characters only.
The length can be set from 1 to 74 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 74). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT GS1 DATABAR EXPANDED LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 19 for some examples of how to set this feature.

Table 19. GS1 DataBar Expanded Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	01 Character	07 Characters	52 Characters	74 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT GS1 DATABAR EXPANDED LENGTH 1SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '1'	'0' and '7'	'5' and '2'	'7' AND '4'
5	Scan ENTER/EXIT PROGRAMMING MODE				

GS1 DataBar Expanded — cont.

GS1 DataBar Expanded Set Length 1 — cont.

ENTER/EXIT PROGRAMMING MODE

Select GS1 DataBar Expanded Set Length 1 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

01 = Length 1 is 1 Character

GS1 DataBar Expanded — cont.

GS1 DataBar Expanded Set Length 2

This feature specifies one of the barcode lengths for GS1 DataBar Expanded Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the barcode's data characters only.

The length can be set from 1 to 74 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 74). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT GS1 DATABAR EXPANDED LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 20 for some examples of how to set this feature.

Table 20. GS1 DataBar Expanded Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	00 (ignore second length)	07 Characters	52 Characters	74 Characters
2	**Scan ENTER/EXIT PROGRAMMING MODE**				
3	**Scan SELECT GS1 DATABAR EXPANDED LENGTH 2 SETTING**				
4	**Scan Two Characters From** Appendix E, Keypad	'0' and '0'	'0' and '7'	'5' and '2'	'7' and '4'
5	**Scan ENTER/EXIT PROGRAMMING MODE**				

GS1 DataBar Expanded — cont.

GS1 DataBar Expanded Set Length 2 — cont.

ENTER/EXIT PROGRAMMING MODE

Select GS1 DataBar Expanded Set Length 2 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT

74 = Length 2 is 74 Characters

GS1 DataBar Limited

The following options apply to the GS1 DataBar Limited (formerly RSS Limited) symbology.

GS1 DataBar Limited Enable/Disable

When disabled, the reader will not read GS1 DataBar Limited barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GS1 DataBar Limited = Disable
GS1 DataBar Limited = Enable	

GS1 DataBar Limited GS1-128 Emulation

When enabled, GS1 DataBar Limited barcodes will be translated to the GS1-128 label data format.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GS1 DataBar Limited GS1-128 Emulation = Disable
GS1 DataBar Limited GS1-128 Emulation = Enable	

GS1 DataBar Limited — cont.

GS1 DataBar Limited Minimum Reads

This feature specifies the minimum number of consecutive times a GS1 DataBar Limited label must be decoded before it is accepted as good read.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	GS1 DataBar Limited Minimum Reads = 1
GS1 DataBar Limited Minimum Reads = 2	
	GS1 DataBar Limited Minimum Reads = 3
GS1 DataBar Limited Minimum Reads = 4	

Code 39

The following options apply to the Code 39 symbology.

Code 39 Enable/Disable

When disabled, the reader will not read Code 39 barcodes.

ENTER/EXIT PROGRAMMING MODE

	Code 39 = Disable
Code 39 = Enable	DEFAULT

Code 39 — cont.

Code 39 Check Character Calculation

Enable this option to enables/disables calculation and verification of an optional Code 39 check character. When disabled, any check character in the label is treated as a data character

ENTER/EXIT PROGRAMMING MODE

Code 39 Check Character Calculation = Don't Calculate

Code 39 Check Character Calculation = Calculate Std Check

DEFAULT

Code 39 Check Character Calculation = Calculate Mod 7 Check

Code 39 Check Character Calculation = Enable Italian Post Check

Code 39 Check Character Calculation = Enable Daimler Chrysler Check

Code 39 — cont.

Code 39 Check Character Transmission

Enable this option to transmit the check character along with Code 39 barcode data.

ENTER/EXIT PROGRAMMING MODE

Code 39 Check Character Transmission = Don't Send

Code 39 Check Character Transmission = Send

DEFAULT

Code 39 Start/Stop Character Transmission

Enable this option to enable/disable transmission of Code 39 start and stop characters.

ENTER/EXIT PROGRAMMING MODE

DEFAULT

Code 39 Start/Stop Character Transmission = Don't Transmit

Code 39 Start/Stop Character Transmission = Transmit

Code 39 — cont.

Code 39 Full ASCII

In Code 39 decoding, this enables/disables the translation of Code 39 characters to Code 39 full-ASCII characters.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 39 Full ASCII = Disable
Code 39 Full ASCII = Enable	

Code 39 — cont.

Code 39 Quiet Zones

This feature specifies the number of quiet zones for Code 39 labels. Quiet zones are blank areas at the ends of a barcode and are typically 10 times the width of the narrowest bar or space in the label.

ENTER/EXIT PROGRAMMING MODE

Code 39 Quiet Zones = Quiet Zone on one side	
	Code 39 Quiet Zones = Quiet Zones on two sides
Code 39 Quiet Zones = Auto	DEFAULT
	Code 39 Quiet Zones = Virtual Quiet Zones on two sides

Code 39 — cont.

Code 39 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 39 label must be decoded before it is accepted as good read..

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 39 Minimum Reads = 1
Code 39 Minimum Reads = 2	
	Code 39 Minimum Reads = 3
Code 39 Minimum Reads = 4	

Code 39 — cont.

Code 39 Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

This configuration item applies to Code 39 and Code 32.

NOTE

Code 39 — cont.

Code 39 Decoding Level — cont.

ENTER/EXIT PROGRAMMING MODE

Code 39 Decoding Level = 1	
	Code 39 Decoding Level = 2
Code 39 Decoding Level = 3	DEFAULT
	Code 39 Decoding Level = 4
Code 39 Decoding Level = 5	

Code 39 — cont.

Code 39 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Code 39 symbology.

Variable Length — For variable length decoding, a minimum and maximum length may be set.

Fixed Length — For fixed length decoding, two different lengths may be set.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 39 Length Control = Variable Length
Code 39 Length Control = Fixed Length	

Code 39 — cont.

Code 39 Set Length 1

This feature specifies one of the barcode lengths for Code 39 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the barcode's data characters only.
The length can be set from 0 to 50 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 0 to 50). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 39 LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 21 for some examples of how to set this feature.

Table 21. Code 39 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	00 Characters	07 Characters	15 Characters	50 Characters
2	**Scan ENTER/EXIT PROGRAMMING MODE**				
3	**Scan SELECT CODE 39 LENGTH 1 SETTING**				
4	**Scan Two Characters From** Appendix E, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'
5	**Scan ENTER/EXIT PROGRAMMING MODE**				

Code 39 — cont.

Code 39 Set Length 1 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Code 39 Set Length 1 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

02 = Length 1 is 2 Characters

Code 39 — cont.

Code 39 Set Length 2

This feature specifies one of the barcode lengths for Code 39 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the barcode's check, data, and full-ASCII shift characters. The length does not include start/stop characters.

The length can be set from 1 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 50 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 39 LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake, before the last character scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 22 for some examples of how to set this feature.

Table 22. Code 39 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters
2	**Scan ENTER/EXIT PROGRAMMING MODE**				
3	**Scan SELECT CODE 39 LENGTH 2 SETTING**				
4	**Scan Two Characters From** Appendix E, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'
5	**Scan ENTER/EXIT PROGRAMMING MODE**				

Code 39 — cont.

Code 39 Set Length 2 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Code 39Length 2 Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT 50 = Length 2 is 50 Characters

Code 39 — cont.

Code 39 Interdigit Ratio

This feature specifies the ratio between an intercharacter space and module for Code 39 labels.

ENTER/EXIT PROGRAMMING MODE

	Code 39 Interdigit Ratio = Disable
Code 39 Interdigit Ratio = 1	
	Code 39 Interdigit Ratio = 2
Code 39 Interdigit Ratio = 3	
DEFAULT	Code 39 Interdigit Ratio = 4
Code 39 Interdigit Ratio = 5	

Code 39 — cont.

Code 39 Interdigit Ratio — cont.

ENTER/EXIT PROGRAMMING MODE

	Code 39 Interdigit Ratio = 6
Code 39 Interdigit Ratio = 7	
	Code 39 Interdigit Ratio = 8
Code 39 Interdigit Ratio = 9	
	Code 39 Interdigit Ratio = 10

Code 39 — cont.

Code 39 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 39 Character Correlation = Disable
Code 39 Character Correlation = Enable	

Code 39 Stitching

This option enables/disables stitching for Code 39 labels. When parts of a Code 39 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.

ENTER/EXIT PROGRAMMING MODE

	Code 39 Stitching = Disable
Code 39 Stitching = Enable	DEFAULT

Code 32

The following options apply to the Code 32 (Italian Pharamaceutical Code) symbology.

Code 32 Enable/Disable

When disabled, the reader will not read Code 32 barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 32 = Disable
Code 32 = Enable	

Code 32 Feature Setting Exceptions

NOTE

The following features are set for Code 32 by using these Code 39 settings:

Code 39 Quiet Zones on page 163
Code 39 Minimum Reads on page 164
Code 39 Decoding Level on page 165
Code 39 Interdigit Ratio on page 172
Code 39 Character Correlation on page 174
Code 39 Stitching on page 175

Code 32 — cont.

Code 32 Check Character Transmission

Enable this option to transmit the check character along with Code 32 barcode data.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 32 Check Character Transmission = Don’t Send
Code 32 Check Character Transmission = Send	

Code 32 Start/Stop Character Transmission

This option enables/disable transmission of Code 32 start and stop characters.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 32 Start/Stop Character Transmission = Don’t Transmit
Code 32 Start/Stop Character Transmission = Transmit	

Code 128

The following options apply to the Code 128 symbology.

Code 128 Enable/Disable

When disabled, the reader will not read Code 128 barcodes.

ENTER/EXIT PROGRAMMING MODE

Code 128 = Disable

Code 128 = Enable

DEFAULT

Expand Code 128 to Code 39

This feature enables/disables expansion of Code 128 labels to Code 39 labels.

ENTER/EXIT PROGRAMMING MODE

DEFAULT

Code 128 to Code 39 = Don’t Expand

Code 128 to Code 39 = Expand

Code 128 — cont.

Code 128 Check Character Transmission

Enable this option to transmit the check character along with Code 128 barcode data.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 128 Check Character Transmission = Don't Send
Code 128 Check Character Transmission = Send	

Code 128 Function Character Transmission

Enables/disables transmission of Code128 function characters 1, 2, 3, and 4.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 128 Function Character Transmission = Don't Send
Code 128 Function Character Transmission = Send	

Code 128 — cont.

Code 128 Sub-Code Change Transmission

Enables/disables the transmission of "Sub-Code exchange" characters (NOT transmitted by standard decoding).

ENTER/EXIT PROGRAMMING MODE

DEFAULT

Code 128 Sub-Code Change Transmission = Disable

Code 128 Sub-Code Change Transmission = Enable

Code 128 — cont.

Code 128 Quiet Zones

This feature specifies the number of quiet zones for Code 128 labels. Quiet zones are blank areas at the ends of a barcode and are typically 10 times the width of the narrowest bar or space in the label.

ENTER/EXIT PROGRAMMING MODE

Code 128 Quiet Zones = No Quiet Zones

Code 128 Quiet Zones = Quiet Zone on one side

Code 128 Quiet Zones = Quiet Zones on two sides

Code 128 Quiet Zones = Auto

DEFAULT

Code 128 Quiet Zones = Virtual Quiet Zones on two sides

Code 128 — cont.

Code 128 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 128 label must be decoded before it is accepted as good read..

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 128 Minimum Reads = 1
Code 128 Minimum Reads = 2	
	Code 128 Minimum Reads = 3
Code 128 Minimum Reads = 4	

Code 128 — cont.

Code 128 Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

Code 128 — cont.

Code 128 Decoding Level — cont.

ENTER/EXIT PROGRAMMING MODE

Code 128 Decoding Level = 1	
	Code 128 Decoding Level = 2
Code 128 Decoding Level = 3	DEFAULT
	Code 128 Decoding Level = 4
Code 128 Decoding Level = 5	

Code 128 — cont.

Code 128 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Code 128 symbology.

Variable Length — For variable length decoding, a minimum and maximum length may be set.

Fixed Length — For fixed length decoding, two different lengths may be set.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 128 Length Control = Variable Length
Code 128 Length Control = Fixed Length	

Code 128 — cont.

Code 128 Set Length 1

This feature specifies one of the barcode lengths for Code 128 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the barcode's data characters only.
The length can be set from 1 to 80 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 80). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 128 LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 23 for some examples of how to set this feature.

Table 23. Code 128 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	01 Character	07 Characters	15 Characters	80 Characters
2	**Scan ENTER/EXIT PROGRAMMING MODE**				
3	**Scan SELECT CODE 128 LENGTH 1 SETTING**				
4	**Scan Two Characters From** Appendix E, Keypad	'0' and '1'	'0' and '7'	'1' and '5'	'8' AND '0'
5	**Scan ENTER/EXIT PROGRAMMING MODE**				

Code 128 — cont.

Code 128 Set Length 1 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Code 128 Set Length 1 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT 01 = Length 1 is 1 Character

Code 128 — cont.

Code 128 Set Length 2

This feature specifies one of the barcode lengths for Code 128 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the barcode's data characters only.

The length can be set from 1 to 80 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 80 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 128 LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 24 for some examples of how to set this feature.

Table 24. Code 128 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	00 (Ignore This Length)	07 Characters	15 Characters	80 Characters
2	**Scan ENTER/EXIT PROGRAMMING MODE**				
3	**Scan SELECT CODE 128 LENGTH 2 SETTING**				
4	**Scan Two Characters From** Appendix E, Keypad	'0' and '0'	'0' and '7'	'0' and 'F'	'5' AND 0'
5	**Scan ENTER/EXIT PROGRAMMING MODE**				

Code 128 — cont.

Code 128 Set Length 2 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Code 128 Length 2 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT

80 = Length 2 is 80 Characters

Code 128 — cont.

Code 128 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 128 Character Correlation = Disable
Code 128 Character Correlation = Enable	

Code 128 — cont.

Code 128 Stitching

This option enables/disables stitching for Code 128 labels. When parts of a Code 128 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.

ENTER/EXIT PROGRAMMING MODE

	Code 128 Stitching = Disable
Code 128 Stitching = Enable	DEFAULT

GS1-128

The following options apply to the GS1-128 symbology. (Also known as USS-128, GTIN-128, UCC-128, EAN 128.)

GS1-128 Enable

This option enables/disables the ability of the reader to translate GS1-128 labels to the GS1-128 data format. Options are:

- Transmit GS1-128 labels in Code 128 data format.
- Transmit GS1-128 labels in GS1-128 data format.
- Do not transmit GS1-128 labels.

ENTER/EXIT PROGRAMMING MODE

DEFAULT ➡	GS1-128 = Transmit in Code 128 data format
GS1-128 = Transmit in GS1-128 data format	
	GS1-128 = Do not transmit GS1-128 labels

Interleaved 2 of 5 (I 2 of 5)

The following options apply to the I 2 of 5 symbology.

I 2 of 5 Enable/Disable

When disabled, the reader will not read I 2 of 5 barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	I 2 of 5 = Disable
I 2 of 5 = Enable	

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Check Character Calculation

This option enables/disables calculation and verification of an optional I 2 of 5 check character.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	I 2 of 5 Check Character Calculation = Disable
I 2 of 5 Check Character Calculation = Check Standard (Modulo 10)	
	I 2 of 5 Check Character Calculation = Check German Parcel
I 2 of 5 Check Character Calculation = Check DHL	
	I 2 of 5 Check Character Calculation = Check Daimler Chrysler
I 2 of 5 Check Character Calculation = Check Bosch	

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Check Character Transmission

Enable this option to transmit the check character along with I 2 of 5 barcode data.

ENTER/EXIT PROGRAMMING MODE

	I 2 of 5 Check Character Transmission = Don't Send
I 2 of 5 Check Character Transmission = Send	DEFAULT

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Minimum Reads

This feature specifies the minimum number of consecutive times an I 2 of 5 label must be decoded before it is accepted as good read..

ENTER/EXIT PROGRAMMING MODE

DEFAULT	I 2 of 5 Minimum Reads = 1
I 2 of 5 Minimum Reads = 2	
	I 2 of 5 Minimum Reads = 3
I 2 of 5 Minimum Reads = 4	

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Decoding Level

NOTE

This configuration item applies to Interleaved 2 of 5, Datalogic 2 of 5 and Standard 2 of 5.

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer’s needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Decoding Level — cont.

ENTER/EXIT PROGRAMMING MODE

2 of 5 Decoding Level = 1	
	2 of 5 Decoding Level = 2
2 of 5 Decoding Level = 3	DEFAULT
	2 of 5 Decoding Level = 4
2 of 5 Decoding Level = 5	

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Length Control

This feature specifies either variable length decoding or fixed length decoding for the I 2 of 5 symbology.

Variable Length — For variable length decoding, a minimum and maximum length may be set.

Fixed Length — For fixed length decoding, two different lengths may be set.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	I 2 of 5 Length Control = Variable Length
I 2 of 5 Length Control = Fixed Length	

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Set Length 1

This feature specifies one of the barcode lengths for I 2 of 5 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. The length includes the barcode's check and data characters. The length can be set from 2 to 50 characters in increments of two.

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50). The length must be an even number.
2. Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT I 2 of 5 LENGTH 1 SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 27 for some examples of how to set this feature.

Table 25. I 2 of 5 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	2 Characters	6 Characters	14 Characters	50 Characters
2	**Pad with leading zeroes to yield two digits**	02	06	14	50
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT I 2 of 5 LENGTH 1 SETTING**				
5	**Scan Two Characters From** Appendix E, Keypad	'0' and '2'	'0' and '6'	'1' and '4'	'5' AND '0'
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

Interleaved 2 of 5 (I 2 of 5) — cont.

Datalogic 2 of 5 Set Length 1 — cont.

ENTER/EXIT PROGRAMMING MODE

Select I 2 of 5 Length 1 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

06 = Length 1 is 6 Characters

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Set Length 2

This feature specifies one of the barcode lengths for I 2 of 5 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. The length includes the barcode's check and data characters. The length can be set from 2 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50, or 0 to ignore this length). The length must be an even number.
2. Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT I 2 of 5 LENGTH 2 SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 28 for some examples of how to set this feature.

Table 26. I 2 of 5 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	Ignore This Length	4 Characters	14 Characters	50 Characters
2	**Pad with leading zeroes to yield two digits**	00	04	14	50
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT I 2 OF 5 LENGTH 2 SETTING**				
5	**Scan Two Characters From** Appendix E, Keypad	'0' and '0'	'0' and '4'	'1' and '4'	'5' AND '0'
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Set Length 2 — cont.

ENTER/EXIT PROGRAMMING MODE

Select I 2 of 5 Length 2 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

50 = Length 2 is 50 Characters

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	I 2 of 5 Character Correlation = Disable
I 2 of 5 Character Correlation = Enable	

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Stitching

This option enables/disables stitching for I 2 of 5 labels. When parts of a I 2 of 5 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	I 2 of 5 Stitching = Disable
I 2 of 5 Stitching = Enable	

Datalogic 2 of 5

The following options apply to the Datalogic 2 of 5 symbology.

Datalogic 2 of 5 Enable/Disable

When disabled, the reader will not read Datalogic 2 of 5 barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Datalogic 2 of 5 = Disable
Datalogic 2 of 5 = Enable	

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Check Character Calculation

This option enables/disables calculation and verification of an optional Datalogic 2 of 5 check character.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Datalogic 2 of 5 Check Character Calculation = Disable
Datalogic 2 of 5 Check Character Calculation = Enable	

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Minimum Reads

This feature specifies the minimum number of consecutive times an Datalogic 2 of 5 label must be decoded before it is accepted as good read.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	I 2 of 5 Minimum Reads = 1
I 2 of 5 Minimum Reads = 2	
	I 2 of 5 Minimum Reads = 3
I 2 of 5 Minimum Reads = 4	

Datalogic 2 of 5 Decoding Level

NOTE

The Datalogic 2 of 5 Decoding Level feature is set using I 2 of 5 Decoding Level on page 197**.**

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Datalogic 2 of 5 symbology.

Variable Length — For variable length decoding, a minimum and maximum length may be set.

Fixed Length — For fixed length decoding, two different lengths may be set.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Datalogic 2 of 5 Length Control = Variable Length
Datalogic 2 of 5 Length Control = Fixed Length	

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Set Length 1

This feature specifies one of the barcode lengths for Datalogic 2 of 5 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. The length includes the barcode's check and data characters.

The length can be set from 2 to 50 characters in increments of two.

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50). The length must be an even number.
2. Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT I 2 of 5 LENGTH 1 SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 27 for some examples of how to set this feature.

Table 27. Datalogic 2 of 5 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	2 Characters	6 Characters	14 Characters	50 Characters
2	**Pad with leading zeroes to yield two digits**	02	06	14	50
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT Datalogic 2 of 5 LENGTH 1 SETTING**				
5	**Scan Two Characters From** Appendix E, Keypad	'0' and '2'	'0' and '6'	'1' and '4'	'5' AND '0'
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Set Length 1 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Datalogic 2 of 5 Length 1 Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT 06 = Length 1 is 6 Characters

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Set Length 2

This feature specifies one of the barcode lengths for Datalogic 2 of 5 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. The length includes the barcode's check and data characters.

The length can be set from 2 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50, or 0 to ignore this length). The length must be an even number.
2. Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT Datalogic 2 of 5 LENGTH 2 SETTING.
5. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 28 for some examples of how to set this feature.

Table 28. Datalogic 2 of 5 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	Ignore This Length	4 Characters	14 Characters	50 Characters
2	**Pad with leading zeroes to yield two digits**	00	04	14	50
3	**Scan ENTER/EXIT PROGRAMMING MODE**				
4	**Scan SELECT DATALOGIC 2 OF 5 LENGTH 2 SETTING**				
5	**Scan Two Characters From** Appendix E, Keypad	'0' and '0'	'0' and '4'	'1' and '4'	'5' AND '0'
6	**Scan ENTER/EXIT PROGRAMMING MODE**				

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Set Length 2 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Datalogic 2 of 5 Length 2 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

50 = Length 2 is 50 Characters

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Interdigit Maximum Ratio

This feature specifies the maximum ratio between intercharacter space and module for Datalogic 2 of 5.

ENTER/EXIT PROGRAMMING MODE

Datalogic 2 of 5 Interdigit Maximum Ratio = Disable

Datalogic 2 of 5 Interdigit Maximum Ratio = 1

Datalogic 2 of 5 Interdigit Maximum Ratio = 2

Datalogic 2 of 5 Interdigit Maximum Ratio = 3

DEFAULT

Datalogic 2 of 5 Interdigit Maximum Ratio = 4

Datalogic 2 of 5 Interdigit Maximum Ratio = 5

Datalogic 2 of 5 Interdigit Maximum Ratio — cont.

	Datalogic 2 of 5 Interdigit Maximum Ratio = 6
Datalogic 2 of 5 Interdigit Maximum Ratio = 7	
	Datalogic 2 of 5 Interdigit Maximum Ratio = 8
Datalogic 2 of 5 Interdigit Maximum Ratio = 9	
	Datalogic 2 of 5 Interdigit Maximum Ratio = 10

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	I 2 of 5 Character Correlation = Disable
I 2 of 5 Character Correlation = Enable	

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Stitching

This option enables/disables stitching for Datalogic 2 of 5 labels. When parts of a Datalogic 2 of 5 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.

ENTER/EXIT PROGRAMMING MODE

DEFAULT

Datalogic 2 of 5 Stitching = Disable

Datalogic 2 of 5 Stitching = Enable

Codabar

The following options apply to the Codabar symbology.

Codabar Enable/Disable

When disabled, the reader will not read Codabar barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Codabar = Disable
Codabar = Enable	

Codabar — cont.

Codabar Check Character Calculation

Enable this option to enables/disables calculation and verification of an optional Codabar check character. When disabled, any check character in the label is treated as a data character

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Codabar Check Character Calculation = Don’t Calculate
Codabar Check Character Calculation = Enable AIM standard check char.	
	Codabar Check Character Calculation = Enable Modulo 10 check char.

Codabar — cont.

Codabar Check Character Transmission

Enable this option to transmit the check character along with Codabar barcode data.

ENTER/EXIT PROGRAMMING MODE

	Codabar Check Character Transmission = Don’t Send
Codabar Check Character Transmission = Send	DEFAULT

Codabar Start/Stop Character Transmission

Enable this option to enable/disable transmission of Codabar start and stop characters.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Codabar Start/Stop Character Transmission = Don’t Transmit
Codabar Start/Stop Character Transmission = Transmit	

Codabar — cont.

Codabar Start/Stop Character Set

This option specifies the format of transmitted Codabar start/stop characters.

ENTER/EXIT PROGRAMMING MODE

	Codabar Check Character Set = ABCD/TN*E
Codabar Check Character Set = ABCD/ABCD	
	Codabar Check Character Set = abcd/tn*e
Codabar Check Character Set = abcd/abcd	DEFAULT

Codabar — cont.

Codabar Start/Stop Character Match

When enabled, this option requires that start and stop characters match.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Codabar Start/Stop Character Match = Don't Require Match
Codabar Start/Stop Character Match = Require Match	

Codabar — cont.

Codabar Quiet Zones

This feature specifies the number of quiet zones for Codabar labels. Quiet zones are blank areas at the ends of a barcode and are typically 10 times the width of the narrowest bar or space in the label.

ENTER/EXIT PROGRAMMING MODE

Codabar Quiet Zones = Quiet Zone on one side

Codabar Quiet Zones = Quiet Zones on two sides

Codabar Quiet Zones = Auto

DEFAULT

Codabar Quiet Zones = Virtual Quiet Zones on two sides

Codabar — cont.

Codabar Minimum Reads

This feature specifies the minimum number of consecutive times a Codabar label must be decoded before it is accepted as good read..

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Codabar Minimum Reads = 1
Codabar Minimum Reads = 2	
	Codabar Minimum Reads = 3
Codabar Minimum Reads = 4	

Codabar — cont.

Codabar Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

Codabar — cont.

Codabar Decoding Level — cont.

ENTER/EXIT PROGRAMMING MODE

Codabar Decoding Level = 1	
	Codabar Decoding Level = 2
Codabar Decoding Level = 3	DEFAULT
	Codabar Decoding Level = 4
Codabar Decoding Level = 5	

Codabar — cont.

Codabar Length Control

This feature specifies either variable length decoding or fixed length decoding for the Codabar symbology.

Variable Length — For variable length decoding, a minimum and maximum length may be set.

Fixed Length — For fixed length decoding, two different lengths may be set.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Codabar Length Control = Variable Length
Codabar Length Control = Fixed Length	

Codabar — cont.

Codabar Set Length 1

This feature specifies one of the barcode lengths for Codabar Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the barcode's start, stop, check and data characters. The length must include at least one data character.
The length can be set from 3 to 50 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 3 to 50). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODABAR LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 29 for some examples of how to set this feature.

Table 29. Codabar Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (and pad with leading zeroes)	03 Characters	09 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODABAR LENGTH 1 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '3'	'0' and '9'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Codabar — cont.

Codabar Set Length 1 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Codabar Length 1 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

03 = Length 1 is 3 Characters

Codabar — cont.

Codabar Set Length 2

This feature specifies one of the barcode lengths for Codabar Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. The length includes the barcode's start, stop, check and data characters. The length must include at least one data character.

The length can be set from 3 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 3 to 50 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODABAR LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 30 for some examples of how to set this feature.

Table 30. Codabar Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (and pad with leading zeroes)	00 Ignore This Length	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 39 LENGTH 2 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Codabar — cont.

Codabar Set Length 2 — cont.

ENTER/EXIT PROGRAMMING MODE

Select CodabarLength 2 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	CANCEL

DEFAULT

50 = Length 2 is 50 Characters

Codabar — cont.

Codabar Interdigit Ratio

This feature specifies the ratio between an intercharacter space and module for Codabar labels.

ENTER/EXIT PROGRAMMING MODE

	Codabar Interdigit Ratio = Disable
Codabar Interdigit Ratio = 1	
	Codabar Interdigit Ratio = 2
Codabar Interdigit Ratio = 3	
DEFAULT	Codabar Interdigit Ratio = 4
Codabar Interdigit Ratio = 5	

Codabar — cont.

Codabar Interdigit Ratio — cont.

ENTER/EXIT PROGRAMMING MODE

Codabar Interdigit Ratio = 6

Codabar Interdigit Ratio = 7

Codabar Interdigit Ratio = 8

Codabar Interdigit Ratio = 9

Codabar Interdigit Ratio = 10

Codabar — cont.

Codabar Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Codabar Character Correlation = Disable
Codabar Character Correlation = Enable	

Codabar Stitching

This option enables/disables stitching for Codabar labels. When parts of a Codabar barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Codabar Stitching = Disable
Codabar Stitching = Enable	

Code 11

The following options apply to the Code 11 symbology.

Code 11 Enable/Disable

When disabled, the reader will not read Code 11 barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 11 = Disable
Code 11 = Enable	

Code 11 — cont.

Code 11 Check Character Calculation

This option enables/disables calculation and verification of optional Code 11 check character.

ENTER/EXIT PROGRAMMING MODE

	Code 11 Check Character Calculation = Disable
Code 11 Check Character Calculation = Check C	
	Code 11 Check Character Calculation = Check K
Code 11 Check Character Calculation = Check C and K	DEFAULT

Code 11 — cont.

Code 11 Check Character Transmission

This feature enables/disables transmission of an optional Code 11 check character.

ENTER/EXIT PROGRAMMING MODE

	Code 11 Check Character Transmission = Don’t Send
Code 11 Check Character Transmission = Send	DEFAULT

Code 11 — cont.

Code 11 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 93 label must be decoded before it is accepted as good read..

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 11 Minimum Reads = 1
Code 11 Minimum Reads = 2	
	Code 11 Minimum Reads = 3
Code 11 Minimum Reads = 4	

Code 11 — cont.

Code 11 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Code 11 symbology.

Variable Length — For variable length decoding, a minimum and maximum length may be set.

Fixed Length — For fixed length decoding, two different lengths may be set.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 11 Length Control = Variable Length
Code 11 Length Control = Fixed Length	

Code 11 — cont.

Code 11 Set Length 1

This feature specifies one of the barcode lengths for Code 11 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the barcode's check and data characters.
The length can be set from 2 to 50 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 11 LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 31 for some examples of how to set this feature.

Table 31. Code 11 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (pad with leading zeroes)	02 Characters	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 11 LENGTH 1 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '2'	'0' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Code 11 — cont.

Code 11 Set Length 1 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Code 11 Set Length 1 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

04 = Length 1 is 4 Characters

Code 11 — cont.

Code 11 Set Length 2

This feature specifies one of the barcode lengths for Code 11 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the barcode's check and data characters.

The length can be set from 2 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 11 LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 32 for some examples of how to set this feature.

Table 32. Code 11 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (pad with leading zeroes)	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 11 LENGTH 2 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'0' and 'F'	'3' AND 2'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Code 11 — cont.

Code 11 Set Length 2 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Code 11 Length 2 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT 50 = Length 2 is 50 Characters

Code 11 — cont.

Code 11 Interdigit Ratio

This feature specifies the ratio between an intercharacter space and module for Code 11 labels.

ENTER/EXIT PROGRAMMING MODE

	Code 11 Interdigit Ratio = Disable
Code 11 Interdigit Ratio = 1	
	Code 11 Interdigit Ratio = 2
Code11 Interdigit Ratio = 3	
DEFAULT	Code 11 Interdigit Ratio = 4
Code 11 Interdigit Ratio = 5	

Code 11 — cont.

Code 11 Interdigit Ratio — cont.

ENTER/EXIT PROGRAMMING MODE

Code 11 Interdigit Ratio = 6

Code 11 Interdigit Ratio = 7

Code 11 Interdigit Ratio = 8

Code 11 Interdigit Ratio = 9

Code 11 Interdigit Ratio = 10

Code 11 Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

Code 11 — cont.

Code 11 Decoding Level — cont.

ENTER/EXIT PROGRAMMING MODE

Codabar Decoding Level = 1

Codabar Decoding Level = 2

Codabar Decoding Level = 3

DEFAULT

Codabar Decoding Level = 4

Codabar Decoding Level = 5

Code 11 — cont.

Code 11 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 11 Character Correlation = Disable
Code 11 Character Correlation = Enable	

Code 11 Stitching

This option enables/disables stitching for Code 11 labels. When parts of a Code 11 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 11 Stitching = Disable
Code 11 Stitching = Enable	

Standard 2 of 5

The following options apply to the Standard 2 of 5 symbology.

Standard 2 of 5 Enable/Disable

When disabled, the reader will not read Standard 2 of 5 barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Standard 2 of 5 = Disable
Standard 2 of 5 = Enable	

Standard 2 of 5 — cont.

Standard 2 of 5 Check Character Calculation

This option enables/disables calculation and verification of an optional Standard 2 of 5 check character.

ENTER/EXIT PROGRAMMING MODE

DEFAULT →	Standard 2 of 5 Check Character Calculation = Disable
Standard 2 of 5 Check Character Calculation = Enable	

Standard 2 of 5 Check Character Transmission

This feature enables/disables transmission of an optional Standard 2 of 5 check character.

ENTER/EXIT PROGRAMMING MODE

	Standard 2 of 5 Check Character Transmission = Don’t Send
Standard 2 of 5 Check Character Transmission = Send	← DEFAULT

Standard 2 of 5 — cont.

Standard 2 of 5 Minimum Reads

This feature specifies the minimum number of consecutive times a Standard 2 of 5 label must be decoded before it is accepted as good read.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Standard 2 of 5 Minimum Reads = 1
Standard 2 of 5 Minimum Reads = 2	
	Standard 2 of 5 Minimum Reads = 3
Standard 2 of 5 Minimum Reads = 4	

Standard 2 of 5 Decoding Level

NOTE

The Standard 2 of 5 Decoding Level feature is set using I 2 of 5 Decoding Level on page 197**.**

Standard 2 of 5 — cont.

Standard 2 of 5 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Standard 2 of 5 symbology.

Variable Length — For variable length decoding, a minimum and maximum length may be set.

Fixed Length — For fixed length decoding, two different lengths may be set.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Standard 2 of 5 Length Control = Variable Length
Standard 2 of 5 Length Control = Fixed Length	

Standard 2 of 5 — cont.

Standard 2 of 5 Set Length 1

This feature specifies one of the barcode lengths for Standard 2 of 5 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the barcode's check and data characters.

The length can be set from 1 to 50 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 50). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT STANDARD 2 OF 5 LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 33 for some examples of how to set this feature.

Table 33. Standard 2 of 5 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	01 Character	07 Characters	15 Characters	50 Characters
2	**Scan ENTER/EXIT PROGRAMMING MODE**				
3	**Scan SELECT STANDARD 2 OF 5 LENGTH 1 SETTING**				
4	**Scan Two Characters From** Appendix E, Keypad	'0' and '1'	'0' and '7'	'1' and '5'	'5' AND '0'
5	**Scan ENTER/EXIT PROGRAMMING MODE**				

Standard 2 of 5 — cont.

Standard 2 of 5 Set Length 1 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Standard 2 of 5 Length 1 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

08 = Length 1 is 8 Characters

Standard 2 of 5 — cont.

Standard 2 of 5 Set Length 2

This feature specifies one of the barcode lengths for Standard 2 of 5 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the barcode's check and data characters.

The length can be set from 1 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 50 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT STANDARD 2 OF 5 LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 34 for some examples of how to set this feature.

Table 34. Standard 2 of 5 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (pad with leading zeroes)	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT STANDARD 2 OF 5 LENGTH 2 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Standard 2 of 5 — cont.

Standard 2 of 5 Set Length 2 — cont.

ENTER/EXIT PROGRAMMING MODE

Select Standard 2 of 5 Length 2 Setting

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

50 = Length 2 is 50 Characters

Standard 2 of 5 — cont.

Standard 2 of 5 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Standard 2 of 5 Character Correlation = Disable
Standard 2 of 5 Character Correlation = Enable	

Standard 2 of 5 Stitching

This option enables/disables stitching for Standard 2 of 5 labels. When parts of a Standard 2 of 5 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Standard 2 of 5 Stitching = Disable
Standard 2 of 5 Stitching = Enable	

ISBT 128

The following options apply to the ISBT 128 symbology.

ISBT 128 Enable/Disable

When disabled, the imager will not read ISBT barcodes.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	ISBT 128 = Disable
ISBT 128 = Enable	

ISBT 128 Concatenation

Use this option to enable/disable ISBT128 concatenation of 2 labels.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	ISBN 128 Concatenation = Disable
ISBN 128 Concatenation = Enable	

ISBT 128 — cont.

ISBT 128 Force Concatenation

When enabled, this feature forces concatenation for ISBT.

NOTE

This option is only valid when ISBT 128 Concatenation is enabled. (see page 261).

ENTER/EXIT PROGRAMMING MODE

DEFAULT	ISBT 128 Force Concatenation = Disable
ISBT 128 Force Concatenation = Enable	

ISBT 128 Advanced Concatenation Options

NOTE

Contact Customer Support to set up pairs of label types for concatenation.

Code 4

The following options apply to the Code 4 symbology.

Code 4 Enable/Disable

Enables/Disables ability of imager to decode Code 4 labels.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 4 = Disable
Code 4 = Enable	

Code 4 — cont.

Code 4 Check Character Transmission

This feature enables/disables transmission of an optional Code 4 check character.

ENTER/EXIT PROGRAMMING MODE

Code 4 Check Character Transmission = Don’t Send

Code 4 Check Character Transmission = Send

DEFAULT

Code 4 Hex to Decimal Conversion

This feature enables/disables the conversion of hexidecimal label data to decimal label data.

ENTER/EXIT PROGRAMMING MODE

Code 4 Hex to Decimal Conversion = Disable

Code 4 Hex to Decimal Conversion = Enable

DEFAULT

Code 5

The following options apply to the Code 5 symbology.

Code 5 Enable/Disable

Enables/Disables ability of imager to decode Code 5 labels.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 5 = Disable
Code 5 = Enable	

Code 5 — cont.

Code 5 Check Character Transmission

This feature enables/disables transmission of an optional Code 5 check character.

ENTER/EXIT PROGRAMMING MODE

Code 5 Check Character Transmission = Don't Send

Code 5 Check Character Transmission = Send

DEFAULT

Code 5 Hex to Decimal Conversion

This feature enables/disables the conversion of hexidecimal label data to decimal label data.

ENTER/EXIT PROGRAMMING MODE

Code 5 Hex to Decimal Conversion = Disable

Code 5 Hex to Decimal Conversion = Enable

DEFAULT

Code 4 and Code 5 Common Configuration Items

The following options apply to both Code 4 and Code 5 symbologies.

Code 4 and 5 Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

This configuration item applies to Code 4 and Code 5.

NOTE

Code 4 and Code 5 Common Configuration Items — cont.

Code 4 and 5 Decoding Level — cont.

ENTER/EXIT PROGRAMMING MODE

Code 4 and Code 5 Decoding Level = 1	
	Code 4 and Code 5 Decoding Level = 2
Code 4 and Code 5 Decoding Level = 3	DEFAULT
	Code 4 and Code 5 Decoding Level = 4
Code 4 and Code 5 Decoding Level = 5	

Code 4 and Code 5 Common Configuration Items — cont.

Code 4 and Code 5 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 4 or Code 5 label must be decoded before it is accepted as good read.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Code 4 or Code 5 Minimum Reads = 1
Code 4 or Code 5 Minimum Reads = 2	
	Code 4 or Code 5 Minimum Reads = 3
Code 4 or Code 5 Minimum Reads = 4	

Follett 2 of 5

The following options apply to the Follett 2 of 5 symbology.

Follett 2 of 5 Enable/Disable

Enables/Disables ability of imager to decode Follett 2 of 5 labels.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Follett 2 of 5 = Disable
Follett 2 of 5 = Enable	

NOTES

Chapter 12

BT Features

Introduction

This section provides options and programming related to the reader's radio communication features.

Standard Factory Settings

Reference Appendix B, Standard Defaults for a listing of standard factory settings.

BT Beeper Features

Several options are available to configure beeper behavior for BT operation.

ACK Beep

Enables/disables the ACK beep indication. The ACK beep occurs in reponse to the label acknowledgement (HACK) from the Base Station. The HACK signal is sent according to the settings made for BT Address Stamping on page 296.

ENTER/EXIT PROGRAMMING MODE

	ACK Beep = Disable
ACK Beep = Enable	DEFAULT

Beep Frequency

Adjusts radio-specific beep indications to sound at a low, medium or high frequency, selectable from the list below. (Controls the beeper's pitch/tone.)

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Beep Frequency = Low
Beep Frequency = Medium	
	Beep Frequency = High

Beep Duration

This feature controls the duration of radio-specific beep indications.

ENTER/EXIT PROGRAMMING MODE

	Beep Duration = 60 msec
Beep Duration = 80 msec	DEFAULT
	Beep Duration = 100 msec
Beep Duration = 120 msec	
	Beep Duration = 140 msec

Beep Duration — cont.

ENTER/EXIT PROGRAMMING MODE

Beep Duration = 160 msec

Beep Duration = 180 msec

Beep Duration = 200 msec

Beep Volume

Selects the beeper volume (loudness) of radio-specific beep indications. There are three selectable volume levels.

ENTER/EXIT PROGRAMMING MODE

Beep Volume = Low	
	Beep Volume = Medium
Beep Volume = High	DEFAULT

BT Base Station Beep

Enables/disables a beep indication when the handheld is placed in the Base Station.

ENTER/EXIT PROGRAMMING MODE

	BT Base Station Beep = Disable
BT Base Station Beep = Enable	DEFAULT

Disconnect Beep

Enables/disables the beep indication that a handheld has become disconnected from a Base Station.

ENTER/EXIT PROGRAMMING MODE

	Disconnect Beep = Disable
Disconnect Beep = Enable	DEFAULT

BT Leash Alarm

This setting specifies the number of seconds to sound the Leash Mode beeps (three per second) when the handheld goes out of range. This is especially useful in instances where the reader might inadvertently have been placed in a bag or cart.

For this mode to be effective, the feature Sleep Mode Timeout on page 21, must be disabled. If the reader is asleep, there is no way for it to know where it is relative to the Base Station because communication is not active between the devices.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	BT Leash Alarm = Disabled
BT Leash Alarm = 1 Second	
	BT Leash Alarm = 2 Seconds
BT Leash Alarm = 3 Seconds	
	BT Leash Alarm = 4 Seconds

BT Leash Alarm — cont.

ENTER/EXIT PROGRAMMING MODE

BT Leash Alarm = 5 Seconds

BT Leash Alarm = 10 Seconds

BT Leash Alarm = 25 Seconds

BT Leash Alarm = 30 Seconds

Flash Update

BT Automatic Flash Update

This feature enables/disables the automatic flash update of a reader.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	BT Automatic Flash Update = Disable
BT Automatic Flash Update = Enable	

Request Flash Update

Scan this barcode to request a flash update from a Base Station

NOTE

Do not scan an ENTER/EXIT PROGRAMMING MODE label in conjunction with this barcode.

Request Flash Update

Configuration Update

Automatic Configuration Update

When this feature is enabled, a reader and its linked Base Station can automatically ensure they stay in sync with regard to application hardware and/or configuration. This is accomplished by the linked reader and Base Station comparing application version number and configuration file check sum. If either is different, the Base Station will automatically update the reader with its application/configuration.

If the units are linked, any changes made to the Base Station configuration through the Aladdin™ software will automatically be sent to the reader at the completion of the programming session.

ENTER/EXIT PROGRAMMING MODE

	Automatic Configuration Update = Disable
Automatic Configuration Update = Enable	DEFAULT

Configuration Update From Base Station to Handheld

Scan this barcode to manually request a one-time configuration update from the Base Station to the handheld.

NOTE

Do not scan an ENTER/EXIT PROGRAMMING MODE label in conjunction with this barcode.

Configuration Update From Base Station to Handheld

Configuration Update — cont.

Copy Configuration From Handheld to Base Station

Use this barcode to manually copy the handheld configuration to the Base Station.

NOTE

Do not scan an ENTER/EXIT PROGRAMMING MODE label in conjunction with this barcode.

Copy Configuration From Handheld to Base Station

Battery Charge Mode

This feature specifies the battery charge mode for the Base Station.

ENTER/EXIT PROGRAMMING MODE

	Battery Charge Mode = Charger Disabled
Battery Charge Mode = Charger Enabled	DEFAULT

Powerdown Timeout

The Powerdown Timeout feature sets the time for automatically switching the unit off when the imager has been idle.

ENTER/EXIT PROGRAMMING MODE

	Powerdown Timeout = Disable
Powerdown Timeout = 10 minutes	
	Powerdown Timeout = 20 minutes
Powerdown Timeout = 30 minutes	
	Powerdown Timeout = 40 minutes

Powerdown Timeout — continued

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Powerdown Timeout = 60 Minutes
Powerdown Timeout = 90 Minutes	
	Powerdown Timeout = 120 Minutes

BT Poll Rate

This feature Specifies the time between BT polls.

ENTER/EXIT PROGRAMMING MODE

BT Poll Rate = Maximum BT Poll Rate	
	BT Poll Rate = 10 ms
BT Poll Rate = 20 ms	← DEFAULT
	BT Poll Rate = 30 ms
BT Poll Rate = 50 ms	
	BT Poll Rate = 100 ms

BT Poll Rate — cont.

ENTER/EXIT PROGRAMMING MODE

BT Poll Rate = 150 ms

BT Poll Rate = 200 ms

BT Poll Rate = 500 ms

BT Poll Rate = 990 ms

Batch Features

Batch Mode

This option specifies which mode to use to store labels in the handheld while disconnected from the base. Options are as follows:

- Disabled — The handheld will not store/batch labels.
- Automatic — The handheld will store labels to RAM when the handheld goes out of range and is disconnected from the remote device.
- Manual — The handheld will always store labels to Flash memory. The user must manually send the stored labels to the remote device using a special "batch send" label.

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Batch Mode = Disabled
Batch Mode = Automatic	
	Batch Mode = Manual

Batch Features — cont.

Send Batch

Use this barcode to initiate sending of labels stored in batch memory.

NOTE

Do not scan an ENTER/EXIT PROGRAMMING MODE label in conjunction with this barcode.

Send Batch

Erase Batch Memory

Use this barcode to erase any labels stored in batch memory.

NOTE

Do not scan an ENTER/EXIT PROGRAMMING MODE label in conjunction with this barcode.

Erase Batch Memory

BT Security Features

These features enable/disable the BT system to require a configurable pin code to authenticate/connect the BT devices, and encrypt the data.

BT Pin Code

This option specifies the 4-character pin code to be used for authentication of the BT link. BT Security Mode on page 294 must be enabled in order to require the pin code.

To set the pin code:

1. Determine the desired characters. For example, D254.
2. Convert the characters to hexidecimal using the ASCII Chart on the inside back cover of this manual. In the case of the example, the hexidecimal equivalents would be:

D = 0x44, 2 = 0x32, 5 = 0x35, and 4 = 0x34

3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT BT PIN CODE.
5. Scan the appropriate alpha-numeric characters from the keypad in Appendix E, Keypad representing the hexidecimal entries which was determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 35 for some examples of how to set this feature.

NOTE

Changing the pin code setting will unlink the devices. The setting must also be changed on the Base Station using Aladdin, then the Base Station and reader must be relinked.

This completes the procedure. See Table 35 for some examples of how to set this feature.

Table 35. BT Pin Code Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	1234	D254	1359	STOR
2	Convert the characters to hexadecimal	31 32 33 34	44 32 35 34	31 33 35 39	53 54 4F 52
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT LABEL GONE TIMEOUT SETTING				
5	Scan the Eight Alpha-Numeric Characters From Appendix E, Keypad	31323334	44323534	31333539	53544F52
6	Scan ENTER/EXIT PROGRAMMING MODE				

BT Pin Code — cont.

ENTER/EXIT PROGRAMMING MODE

Select BT Pin Code

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT

31323334 = Default Pin Code is 1234

BT Security Mode

This feature enables/disables authentication and encryption of the BT link. Use the feature, BT Pin Code on page 291, to specify the pin code used to authenticate the BT Link.

NOTE **Changing the security mode setting will unlink the devices. The setting must also be changed on the Base Station using Aladdin, then the Base Station and reader must be relinked.**

ENTER/EXIT PROGRAMMING MODE

DEFAULT	BT Security Mode = Disable
BT Security Mode = Enable	

BT SPP Mode

Enables/disables the ability of the Base Station to emulate a PowerScan 7000 model Base Station. When enabled, the Base Station can link with a PowerScan 7000BT handheld.

NOTE

To use this feature, BT Security Mode on page 294 must be disabled. The handheld must link to the base in this mode as "client to PC"

ENTER/EXIT PROGRAMMING MODE

DEFAULT	BT SPP Mode = Disable
BT SPP Mode = Enable	

BT Address Stamping

These features allow configuration of source radio data inclusion.

Source Radio Address Transmission

Enables/disables the ability of source radio information to be transmitted to the host and, if so, at what position with respect to the label data.
Options are:

Do Not Include — Do not include source-radio ID

Prefix — Include source-radio ID as prefix

NOTE

When included as a prefix, the source-radio ID is displayed after all label formatting has been applied.

The 6 byte hex address is sent as 12 ascii characters, ie, an address of:

00 06 66 00 1A ED

will be sent as (shown in hex):

30 30 30 36 36 36 30 30 31 41 45 44

ENTER/EXIT PROGRAMMING MODE

DEFAULT	Source Radio Address Transmission = Do Not Include
Source Radio Address Transmission = Prefix	

Source Radio Address Delimiter Character

This option specifies the delimiter character to be placed between the label data and radio address when address stamping is enabled.

NOTE

This feature only applies if Source Radio Address Transmission on page 296 is enabled.

Follow these instructions to select the delimiter character:

1. Determine the desired character, then find its hexadecimal equivalent on the ASCII Chart on the inside back cover. A setting of 00 specifies no delimiter character.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SET SOURCE RADIO ADDRESS DELIMITER CHARACTER.
4. Scan the appropriate two digits from the keypad in Appendix E, Keypad, that represent the hexidecimal characters which were determined in the steps above. You will hear a two-beep indication after the last character.

NOTE

If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 36 for some examples of how to set this feature.

Table 36. Source Radio Address Delimiter Character Setting Examples

STEP	ACTION	EXAMPLES			
1	**Desired Setting**	No delimiter character	, (comma)	- (dash)	/ (slash)
2	**Scan ENTER/EXIT PROGRAMMING MODE**				
3	**Scan SET SOURCE RADIO ADDRESS DELIMiTER CHARACTER**				
4	**Scan Two Characters From** Appendix E, Keypad	‘0’ and ‘0’	‘2’ and ‘C’	‘2’ and ‘D’	‘2’ AND ‘F’
5	**Scan ENTER/EXIT PROGRAMMING MODE**				

Source Radio Address Delimiter Character — cont.

ENTER/EXIT PROGRAMMING MODE

Set Source Radio Address Delimiter Character

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

CANCEL

DEFAULT 00 = No Delimiter Character

Appendix A

Technical Specifications

Table 37 contains Physical and Performance Characteristics, User Environment and Regulatory information. Table 38 provides Standard Cable Pinouts.

Table 37. Technical Specifications

Item	Description
Physical Characteristics — Reader	
Color	Yellow/Black Black/Black
Dimensions	Height 7.5”/190 mm Length 4.5”/115 mm Width 3.0”/75 mm
Weight (battery included)	Approximately 13.4 ounces/380 g
Physical Characteristics — Base Station	
Color	Black/Yellow
Dimensions	Height 1.8” (46 mm) — 5.45” (13.84cm) w/antenna Length 9.5” (24.13cm) Width 4.0” (10.16cm) — 4.75” (12.07cm) w/antenna
Weight	12.5 ounces/354 g
Electrical Characteristics — Base Station	
Input Voltage	5 VDC +/- 5% 7 – 14 VDC
Input Power	
Maximum Operating Power (charging dead battery)	6.5 W (while charging)
Typical Operating Power (charging full battery)	1.4 W
Typical Standby Power	1 W
Input Current	
Maximum Operating Current	1300 mA @ 5VDC
Typical Operating Current	250 mA @ 5VDC
Typical Operating Current (TX data)	210 mA @ 5VDC
Typical Standby Current (Idle)	115 mA
Performance Characteristics	
Light Source	Dual LEDs

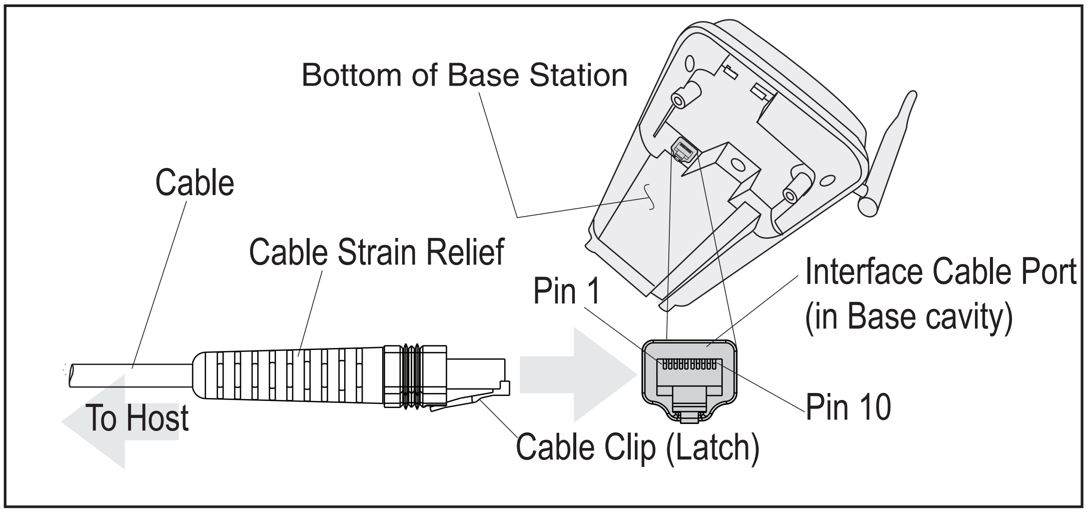
Item	Description
Roll (Tilt) Tolerance	± 30° from normal
Pitch Tolerance	± 82°
Skew (Yaw) Tolerance	± 65°
Field of View	2” wide at 1” from the reader 7” wide at 7” from the reader
Depth of Field	100 mil: typical 5.1" to 208.7" (13 cm to 530 cm) 55 mil: typical 1.9" to 118.1" (4.7 cm to 300 cm) 40 mil: typical 0.8" to 94.5" (2 cm to 240 cm) 20 mil: typical 0.1" to 46.9" (0.3 cm to 119 cm) 13 mil: typical 0" to 31.5" (0.1 cm to 80 cm) 10 mil: typical 0" to 23.6" (0 cm to 60 cm) 7.5 mil: typical 0.1" to 17.3" (0.2 cm to 44 cm) 5 mil: typical 0.6" to 5.5" (1.5 cm to 14 cm)
Minimum Element Width	3 mil
Print Contrast Minimum	15% minimum reflectance
Decode Capability	UPC/EAN/JAN, P2 /P5 add-ons; Code 39; Italian Code 32; Code 128; C128 ISBT; Code 128 add-ons; I 2 of 5; Datalogic 2 of 5; Standard 2 of 5; Code 11; Codabar; EAN 128; Code 93; MSI; DataBar Omnidirectional, DataBar Limited, DataBar Expanded.
Interfaces Supported	RS-232 Std., RS-232 Wincor-Nixdorf, RS-232 OPOS, IBM 46xx (ports 5B and 9B), USB Com Std., USB Keyboard, USB Alternate Keyboard, USB-OEM, Keyboard Wedge (AT with or w/o Alternate Key, IBM AT PS2 with or w/o Alternate Key, PC-XT, IBM 3153, IBM Terminals 31xx, 32xx, 34xx, 37xx make only and make break keyboard, and Digital Terminals VT2x, VT3xx, VT4xx, and Apple).
User Environment — Reader	
Operating Temperature	-4° to +122° F (-20° to +50° C)
Storage Temperature	-40° to +140° F (-40° to +60° C)
Humidity	Operating: 5% to 90% relative humidity, non-condensing Storage: 5% to 95% relative humidity, non-condensing
Drop Specifications	50 drops from 2 meters (6.5 feet) to concrete, -30°C to 50°C
Ambient Light Immunity	Up to 100,000 LUX in sunlight.
Contaminants Spray/rain Dust/particulates	 IEC 529-IPX5 IEC 529-IP6X
Beeper Loudness	84 dBA typical for operator at a distance of 19” (50cm)

Item	Description
ESD Level	25 KV
User Environment — Base Station & Charger	
Contaminants Spray/rain Dust/particulates	 IEC 529-IPX4 IEC 529-IP5X
Regulatory	
Electrical Safety	UL 60950-1, CSA C22.2 No. 60950-1, IEC 60950-1
EMI/RFI	USA FCC Part 15 Class B. Canada ICES-003 Class B. European Union EMC and R&TTE Directives. EN 301 489-17 — Radio Immunity. EN 300 328 v 1.7.1 Radio Emissions. EN 61000 6-2 — Generic Immunity for Industrial Environments. EN 50392 — Human exposure to electromagnetic fields.
Laser Safety	Complies with 21 CFR 1040 Class 2 and IEC/EN60825-1:2007 Class II when laser pointer installed.

Standard Cable Pinouts

Figure 8 and Table 38 provide standard pinout information for the Base Station's cable.

Figure 8. Standard Cable Pinouts


Bottom of Base Station
Cable
Cable Strain Relief
Pin 1
Interface Cable Port
(in Base cavity)
Pin 10
To Host
Cable Clip (Latch)

The signal descriptions in Table 38 apply to the connector on the Base Station and are for reference only.

Table 38. Standard Cable Pinouts — Base Station Side

Pin	RS-232	OEM	USB	Keyboard Wedge
1	RTS (out)			
2			D+	CLKIN (KBD side)
3			D-	DATAIN (KBD side)
4	GND	GND	GND	GND
5	RX			
6	TX			
7	VCC	VCC	VCC	VCC
8		IBM_B		CLKOUT (PC side)
9		IBM_A		DATAOUT (PC side)
10	CTS (in)			

Appendix B

Standard Defaults

The most common configuration settings are listed in the "Default" column of the table below. Page references are also provided for feature descriptions and programming barcodes for each parameter. A column has also been provided for recording of your preferred default settings for these same configurable features.

Table 39. Standard Defaults

Parameter	Default	Your Setting	Page Number
General Features			
Double Read Timeout	0.4 Second		17
Label Gone Timeout	160 ms		19
Sleep Mode Timeout	Disable		21
Sleep Mode Timeout	Disable		21
Power On Alert	4 Beeps		23
Good Read: When to Indicate	After Decode		24
Good Read Beep Type	Mono		25
Good Read Beep Frequency	High		26
Good Read Beep Length	80 ms		26
Good Read Beep Volume	High		28
Good Read LED Duration	2 Seconds		29
Scan Mode	Trigger Single		31
Stand Mode Triggered Timeout	0.5 Seconds		33
Scanning Active Time	5 Seconds		35
Flash On Time	1 Second		37
Flash Off Time	600 ms		39
Laser Pointer Control	Start scanning immediately after trigger		42
Laser Pointer Period	500 ms		43

Parameter	Default	Your Setting	Page Number
Green Spot Duration	300 ms		45
RS-232			
Baud Rate	9600		47
Data Bits	8 Data Bits		49
Stop Bits	1 Stop Bit		50
Parity	None		51
Handshaking Control	Disable		52
RS-232/USB-COM			
RTS/CTS Scan Control — RTS is asserted during transmissions. CTS gates transmissions and controls enable and disable state of scanner.	No Delay		52
Beep On ASCII BEL	Disable		56
Beep On Not on File	Enable		56
ACK Character	‘ACK’		58
NAK Character	‘NAK’		60
ACK NAK Timeout Value	600 ms		62
ACK NAK Retry Count	3 Retries		64
ACK NAK Error Handling	Ignore Errors Detected		66
Indicate Transmission Failure	Enable		67
Disable Character	‘D’		68
Enable Character	‘E’		70
Keyboard Wedge			
Country Mode	U.S. Keyboard		74
Caps Lock State	Caps Lock OFF		77
Numlock	Numlock Key Unchanged		77
Send Control Characters	Disable		78
Wedge Quiet Interval	100 ms		79
Intercharacter Delay	No Delay		81
Intercode Delay	No Delay		83

Parameter	Default	Your Setting	Page Number
USB Keyboard Speed	1 ms		85
USB-OEM			
USB-OEM Device Usage	Handheld Reader		88
Data Editing			
Global Prefix/Suffix	No Global Prefix Global Suffix = 0x0D (CR)		96
Global AIM ID	Disable		98
Label ID Control	Disable		105
Case Conversion	Disable		112
Character Conversion	No Char Conversion		113
Symbologies			
Coupon Control	Enable UPC/EAN coupon decoding		116
UPC-A			
UPC-A Enable/Disable	Enable		117
UPC-A Check Character Transmission	Enable		117
Expand UPC-A to EAN-13	Don’t Expand		118
UPC-A Number System Character Transmission	Transmit		118
UPC-A Minimum Reads	1		136
In-Store Minimum Reads	2		119
UPC-E			
UPC-E Enable/Disable	Enable		120
UPC-E Check Character Transmission	Send		120
Expand UPC-E to EAN-13	Don’t Expand		121
Expand UPC-E to UPC-A	Don’t Expand		121
UPC-E Number System Character Transmission	Transmit		122
UPC-E Minimum Reads	2		123
GTIN			
GTIN Formatting	Disable		124

Parameter	Default	Your Setting	Page Number
EAN 13			
EAN 13 Enable/Disable	Enable		125
EAN 13 Check Character Transmission	Send		125
EAN-13 Flag 1 Character	Transmit		126
EAN-13 ISBN Conversion	Disable		127
EAN 13 Minimum Reads	1		128
EAN 8			
EAN 8 Enable/Disable	Enable		129
EAN 8 Check Character Transmission	Send		129
Expand EAN 8 to EAN 13	Disable		130
EAN 8 Minimum Reads	1		131
UPC/EAN Global Settings			
UPC/EAN Decoding Level	3		132
UPC/EAN Correlation	Disable		134
UPC/EAN Reconstruction	Disable		134
UPC/EAN Price Weight Check	Disable		135
Add-Ons			
Optional Add-ons	Disable P2, P5 and P8		137
Optional Add-On Timer	70 ms		139
Optional GS1-128 Add-On Timer	Disable		142
P2 Add-Ons Minimum Reads	2		145
P5 Add-Ons Minimum Reads	1		146
GS1-128 Add-Ons Minimum Reads	1		147
DataBar Omnidirectional			
GS1 DataBar Omnidirectional Enable/ Disable	Disable		148
GS1 DataBar Omnidirectional GS1-128 Emulation	Disable		148
GS1 DataBar Omnidirectional Minimum Reads	1		149

Parameter	Default	Your Setting	Page Number
DataBar Expanded			
GS1 DataBar Expanded Enable/Disable	Disable		150
GS1 DataBar Expanded GS1-128 Emulation	Disable		150
GS1 DataBar Expanded Minimum Reads	1		151
GS1 DataBar Expanded Length Control	Variable		152
GS1 DataBar Expanded Set Length 1	1		153
GS1 DataBar Expanded Set Length 2	74		155
DataBar Limited			
GS1 DataBar Limited Enable/Disable	Disable		157
GS1 DataBar Limited GS1-128 Emulation	Disable		157
GS1 DataBar Limited Minimum Reads	1		158
Code 39			
Code 39 Enable/Disable	Enable		159
Code 39 Check Character Calculation	Calculate		160
Code 39 Check Character Transmission	Send		161
Code 39 Start/Stop Character Transmission	Don’t Transmit		161
Code 39 Full ASCII	Disable		162
Code 39 Quiet Zones	Auto		163
Code 39 Minimum Reads	1		164
Code 39 Decoding Level	3		165
Code 39 Length Control	Variable		167
Code 39 Set Length 1	2		168
Code 39 Set Length 2	50		170
Code 39 Interdigit Ratio	4		172
Code 39 Character Correlation	Disable		174
Code 39 Stitching	Enable		175
Code 32			
Code 32 Enable/Disable	Disable		176

Parameter	Default	Your Setting	Page Number
Code 32 Feature Setting Exceptions	3		176
Code 32 Check Character Transmission	Don't Send		177
Code 32 Start/Stop Character Transmission	Don't Transmit		177
Code 128			
Code 128 Enable/Disable	Enable		178
Expand Code 128 to Code 39	Don't Expand		178
Code 128 Check Character Transmission	Send		179
Code 128 Quiet Zones	Auto		181
Code 128 Minimum Reads	1		182
Code 128 Decoding Level	3		183
Code 128 Length Control	Variable		185
Code 128 Set Length 1	1		186
Code 128 Set Length 2	80		188
Code 128 Character Correlation	Disable		190
Code 128 Stitching	Enable		191
UCC-EAN 128			
GS1-128 Enable	Transmit in Code 128 Data Format		192
ISBT 128			
ISBT 128 Enable/Disable	Disable		261
ISBT 128 Concatenation	Disable		261
ISBT 128 Force Concatenation	Enable		262
ISBT 128 Advanced Concatenation Options	Disable		262
Interleaved 2 of 5			
I 2 of 5 Enable/Disable	Enable		193
I 2 of 5 Check Character Calculation	Disable		194
I 2 of 5 Check Character Transmission	Send		195
I 2 of 5 Minimum Reads	1		208
I 2 of 5 Decoding Level	3		197

Parameter	Default	Your Setting	Page Number
I 2 of 5 Length Control	Variable		199
I 2 of 5 Set Length 1	12		200
I 2 of 5 Set Length 2	100		202
I 2 of 5 Character Correlation	Disable		204
I 2 of 5 Stitching	Disable		205
Datalogic 2 of 5			
Datalogic 2 of 5 Enable/Disable	Enable		206
Datalogic 2 of 5 Check Character Calculation	Disable		207
Datalogic 2 of 5 Minimum Reads	1		208
Datalogic 2 of 5 Length Control	Variable		209
Datalogic 2 of 5 Set Length 1	12		210
Datalogic 2 of 5 Set Length 2	100		212
Datalogic 2 of 5 Character Correlation	Disable		216
Datalogic 2 of 5 Stitching	Disable		217
Codabar			
Codabar Enable/Disable	Disable		218
Codabar Check Character Calculation	Don't Calculate		219
Codabar Check Character Transmission	Send		220
Codabar Start/Stop Character Transmission	Don't Transmit		220
Codabar Start/Stop Character Set	abcd/abcd		221
Codabar Start/Stop Character Match	Don't Require Match		222
Codabar Quiet Zones	Auto		223
Codabar Minimum Reads	1		224
Codabar Decoding Level	3		225
Codabar Length Control	Variable		227
Codabar Set Length 1	3		228
Codabar Set Length 2	50		230
Codabar Interdigit Ratio	4		232

Parameter	Default	Your Setting	Page Number
Codabar Character Correlation	Disable		234
Codabar Stitching	Disable		235
Code 11			
Code 11 Enable/Disable	Disable		236
Code 11 Check Character Calculation	Check C and K		237
Code 11 Check Character Transmission	Send		238
Code 11 Minimum Reads	1		239
Code 11 Length Control	Variable		240
Code 11 Set Length 1	4		241
Code 11 Set Length 2	50		243
Code 11 Interdigit Ratio	4		245
Code 11 Decoding Level	3		247
Code 11 Character Correlation	Disable		249
Code 11 Stitching	Disable		250
Standard 2 of 5			
Standard 2 of 5 Enable/Disable	Disable		251
Standard 2 of 5 Check Character Calculation	Disable		252
Standard 2 of 5 Check Character Transmission	Send		252
Standard 2 of 5 Minimum Reads	1		253
Standard 2 of 5 Decoding Level	3		253
Standard 2 of 5 Length Control	Variable		254
Standard 2 of 5 Set Length 1	8		255
Standard 2 of 5 Set Length 2	50		257
Standard 2 of 5 Character Correlation	Disable		259
Standard 2 of 5 Stitching	Disable		260
ISBT 128			
ISBT 128 Enable/Disable	Disable		261
ISBT 128 Concatenation	Disable		261
ISBT 128 Force Concatenation	Disable		262

Parameter	Default	Your Setting	Page Number
Code 4			
Code 4 Enable/Disable	Disable		263
Code 4 Check Character Transmission	Don’t Send		264
Code 4 Hex to Decimal Conversion	Enable		264
Code 5			
Code 5 Enable/Disable	Disable		265
Code 5 Check Character Transmission	Send		266
Code 5 Hex to Decimal Conversion	Enable		266
Code 4 and Code 5 Common Configuration Items			
Code 4 and 5 Decoding Level	3		267
Code 4 and Code 5 Minimum Reads	1		269
Follett 2 of 5			
Follett 2 of 5 Enable/Disable	Disable		270
BT Features			
ACK Beep	Enable		274
Beep Frequency	Low		275
Beep Duration	80 ms		276
Beep Volume	High		278
BT Base Station Beep	Disable		279
Disconnect Beep	Enable		279
BT Leash Alarm	Enable		280
BT Leash Alarm	Disable		280
BT Automatic Flash Update	Disable		282
Automatic Configuration Update	Enable		283
Battery Charge Mode	Low Charge		285
Powerdown Timeout	Disable		
BT Poll Rate	Wait Forever		288
BT Poll Rate	2 Seconds		288
BT Poll Rate	20 ms		288
Batch Mode	Disable		290

Parameter	Default	Your Setting	Page Number
BT Pin Code	1234		291
BT Security Mode	Disable		294
BT SPP Mode	Disable		295
BT Address Stamping	Send HACK as soon as the Base Station receives a label		296
Source Radio Address Transmission	Do Not Include		296
Source Radio Address Delimiter Character	No Delimiter Character		297

Appendix C

LED and Beeper Indications

The reader's beeper sounds and its LED illuminates to indicate various functions or errors on the reader. An optional "Green Spot" also performs useful functions. The tables below list these indications. One exception to the behaviors listed in the tables is that the reader's functions are programmable, and may or may not be turned on. For example, certain indications, such as the power-up beep can be disabled using programming barcode labels.

General Functions — LED and Beeper Indications

INDICATION	DESCRIPTION	LED	BEEPER
Power-up Beep	The reader is in the process of powering-up.		Reader beeps four times at highest frequency and volume upon power-up.
Good Read Beep	A label has been successfully scanned by the reader.	LED behavior for this indication is configurable via the feature "Good Read: When to Indicate"	The reader will beep once at current frequency, volume, mono/bi-tonal setting and duration upon a successful label scan.
ROM Failure	There is an error in the reader's software/programming	Flashes	Reader sounds one error beep at highest volume.
Limited Scanning Label Read	Indicates that a host connection is not established when the IBM or USB interface is enabled.	N/A	Reader 'chirps' six times at the highest frequency and current volume.
Reader Active Mode	The reader is active and ready to scan.	The LED is lit steadily[a]	N/A
Reader Disabled	The reader has been disabled by the host.	The LED blinks continuously	N/A
Green Spot is on continuously	While in Object Sense mode or Trigger Object Sense mode the green spot shall be on while in stand watch state.	N/A	N/A
Green Spot[a] flashes momentarily	Upon successful read of a label, the software shall turn the green spot on for the time specified by the configured value.	N/A	N/A

Programming Mode - The following indications ONLY occur when the reader is in Programming Mode.

Label Programming Mode Entry	A valid programming label has been scanned.	LED blinks continuously	Reader sounds four low frequency beeps.
Label Programming Mode Rejection of Label	A label has been rejected.	N/A	Reader sounds three times at lowest frequency & current volume.
Label Programming Mode Acceptance of Partial Label	In cases where multiple labels must be scanned to program one feature, this indication acknowledges each portion as it is successfully scanned.	N/A	Reader sounds one short beep at highest frequency & current volume.
Label Programming Mode Acceptance of Programming	Configuration option(s) have been successfully programmed via labels and the reader has exited Programming Mode.	N/A	Reader sounds one high frequency beep and 4 low frequency beeps followed by reset beeps.
Label Programming Mode Cancel Item Entry	Cancel label has been scanned.	N/A	Reader sounds two times at low frequency and current volume.

[a] Except when in sleep mode or when a Good Read LED Duration other than 00 is selected

BT Beeper Indications

Beep Type	Description	Behavior
Acknowledge (ACK) Label	A label has been sent to the Base Station, which has accepted the data and responded. Control via ACK NAK Options on page 57.	1 beep. Duration, frequency and volume vary, since these are all configurable for this feature.
Label Rejected	Label data sent is rejected by the Base Station (responds with NAK). Control via ACK NAK Options on page 57.	2 beeps at low frequency.
Transmission Error	A label has been sent to but not received by the Base Station (ACK timeout occurred). Control via Indicate Transmission Failure on page 67.	Beep will sound High-low-high-low.
Link Successful	The Linking process has completed successfully between a reader and Base Station (or PC).	Beep will sound Low-med-high.
Link Unsuccessful	The Linking process has completed (timed out) without connecting to a Base (or PC).	Beep will sound High-low-high-low.
Unlink	The reader has unlinked from the Base Station.	Beep will sound High-medium-low.
Paging	Base Station is paging the reader.	5 beeps at high volume and currentGood Read Beep Frequency setting.
BT Reader FRU	The reader will sound this upon detecting aField Replaceable Unit (FRU) error at startup.	1 long error tone[a].
Disconnect	Sounds when the reader disconnects from the Base Station due to out of range, low power, etc. Control via Disconnect Beep on page 279.	Beep will sound High-medium-low. (Same as Unlink)
Good Read Disconnected	A label is read while disconnected, and BT Poll Rate on page 288 is disabled.	1 long beep at low frequency.
Good Read Unlinked	A label is read while unlinked.	Beep will sound High-low-high-low.
Leash mode	The Handheld has disconnected, and BT Leash Alarm on page 280 is enabled.	Beep will sound at high volume, low frequency for the count specified in BT Leash Alarm on page 280.
Low Battery	The battery is getting low	10 beeps at high frequency
Battery Shutdown	The battery has reached a critical low level and the handheld will shut down.	Beep will sound High-medium-low

[a] Upon hearing a long error tone at startup, press the trigger to hear the FRU error beep sequence described in Error Codes on page 317.

BT LED Indications

LED Indication	Behavior	Applies to:	
		Base Station	Reader
Linking in progress	Yellow LED blinks at 2 Hz	YES	YES
Low battery	Green LED blinks 10 times after either of the following events occur: -After every 10th trigger pull. -After 30 seconds of idle time. NOTE: Low battery LED indication coincides with the low battery beep.	NO	YES
Disconnected	LEDs off	YES	YES
Unlinked	LEDs off	YES	YES
BT transmission in progress	Flash yellow LED at 50 Hz while transmitting.	YES	YES
Paging	Yellow LED blinks at the same rate as the paging beep (1 hz)	YES	YES
BT Reader FRU indication	See the topic Error Codes on page 317.	NO	YES
BT Base Station FRU indication	See the topic Error Codes on page 317.	YES	NO
Disabled indication	Green LED blinks once a second while disabled	NO	YES
Battery charge in progress	Green LED blinks once a second while charging	YES	NO
Battery charge complete	Green LED stays ON when charge is complete and reader is seated in the Base Station.	YES	NO
Battery charge error	Yellow LED blinks 550mS on/1500mS off when there is a charge error and reader is seated in the Base Station.	YES	NO

Error Codes

Upon startup, if the reader sounds a long tone, this means the reader has not passed its automatic Selftest and has entered FRU[1] isolation mode. If the reader is reset, the sequence will be repeated. The following table describes the LED flashes/beep codes associated with an error found.

NUMBER OF LED FLASHES/BEEPS	ERROR	CORRECTIVE ACTION
1	Configuration	Contact Helpdesk for assistance
2	Interface PCB	
4	Reader Module	
5	Laser Pointer (if so equipped)	
6	Digital PCB	
14	CPLD/Code Mismatch	

---

[1] Field Replaceable Unit (FRU)

NOTES

Appendix D

Sample Barcodes

The sample barcodes in this appendix are typical representations for their symbology types.

0 12345 67890 5

UPC-A

EAN-13

3 456789 012340

123ABC

Code 39

Code 128

12345678901234567890123456789012345678901234

12345678901231

Interleaved 2 of 5

Code 32

00246897634

5765485

Codabar

Code 93

7554628485

Code 11

MSI

74759330108

DataBar (RSS)

NOTE

DataBar variants must be enabled to read the barcodes below (see DataBar (RSS) on page 321).

10293847560192837465019283746029478450366523
(DataBar Expanded Stacked)

1234890hjio9900mnb
(DataBar Expanded)

08672345650916
(DataBar Limited)

DataBar-14

55432198673467
(DataBar Omnidirectional Truncated)

90876523412674
(DataBar Omnidirectional Stacked)

78123465709811
(DataBar Omnidirectional Stacked)

NOTES

Appendix E

Keypad

Use the barcodes in this appendix to enter numbers as you would select digits/characters from a keypad.

0	
	1
2	
	3
4	
	5

6	
	7
8	
	9
A	
	B
C	

	D
E	
	F

NOTES

Appendix F

Scancode Tables

Control Character Emulation

Control character emulation selects from different scancode tables as listed in this appendix. Each of the control character sets below are detailed by interface type in the tables. These apply to Wedge and USB Keyboard platforms.

Control Character 00 . Characters from 00 to 0x1F are sent as control character Ctrl+Keys, special keys are located from 0x80 to 0xA1.

Control Character 01 . Characters from 00 to 0x1F are sent as control character Ctrl+Capital Key, special keys are located from 0x80 to 0xA1.

Control Character 02 . Special keys are located from 00 to 0x1F and characters from 0x80 to 0xFE are intended as an extended ASCII table (Microsoft Windows Codepage 1252 on page 338)

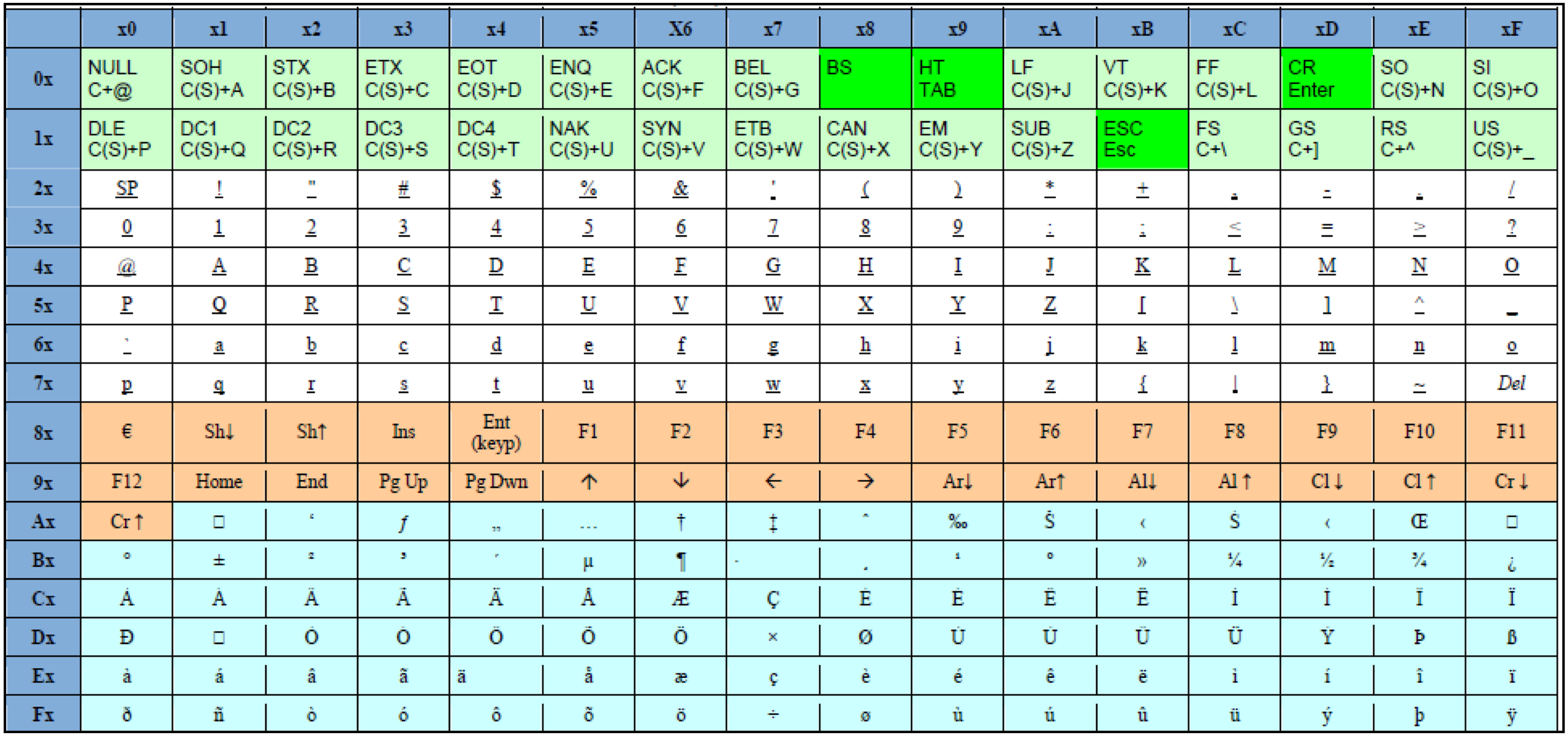
Single Press and Release Keys

In the following tables, Ar↓ means Alt right pressed and Ar↑ means Alt right released and so on. Definitions for other keys are Al (Alt left), Cr (Control Right) Cl (Control Left) Sh (shift). This method can be used for combining Alt, Control or Shift with other keys.

Example: Consider a Control character set to 00. If AltRight+A is required before sending a label to the host, it could be done by setting three Prefix keys in this way: 0x99 0x41 0x9A.

Interface Type PC AT PS/2 or USB-Keyboard

Table F-1. Scancode Set When Control Character is 00 or 01



	x0	x1	x2	x3	x4	x5	X6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL C+@	SOH C(S)+A	STX C(S)+B	ETX C(S)+C	EOT C(S)+D	ENQ C(S)+E	ACK C(S)+F	BEL C(S)+G	BS	HT TAB	LF C(S)+J	VT C(S)+K	FF C(S)+L	CR Enter	SO C(S)+N	SI C(S)+O
1x	DLE C(S)+P	DC1 C(S)+Q	DC2 C(S)+R	DC3 C(S)+S	DC4 C(S)+T	NAK C(S)+U	SYN C(S)+V	ETB C(S)+W	CAN C(S)+X	EM C(S)+Y	SUB C(S)+Z	ESC Esc	FS C+\	GS C+]	RS C+^	US C(S)+_
2x	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	*Del*
8x	€	Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Home	End	Pg Up	Pg Dwn	↑	↓	←	→	Ar↓	Ar↑	Al↓	Al ↑	Cl ↓	Cl ↑	Cr ↓
Ax	Cr ↑	□	‘	ƒ	„	…	†	‡	ˆ	‰	Š	‹	Š	‹	Œ	□
Bx	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
Cx	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Ð	□	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Extended characters (sky blue) are sent through dedicated keys (when available in the selected country mode) or by using an Alt Mode sequence.

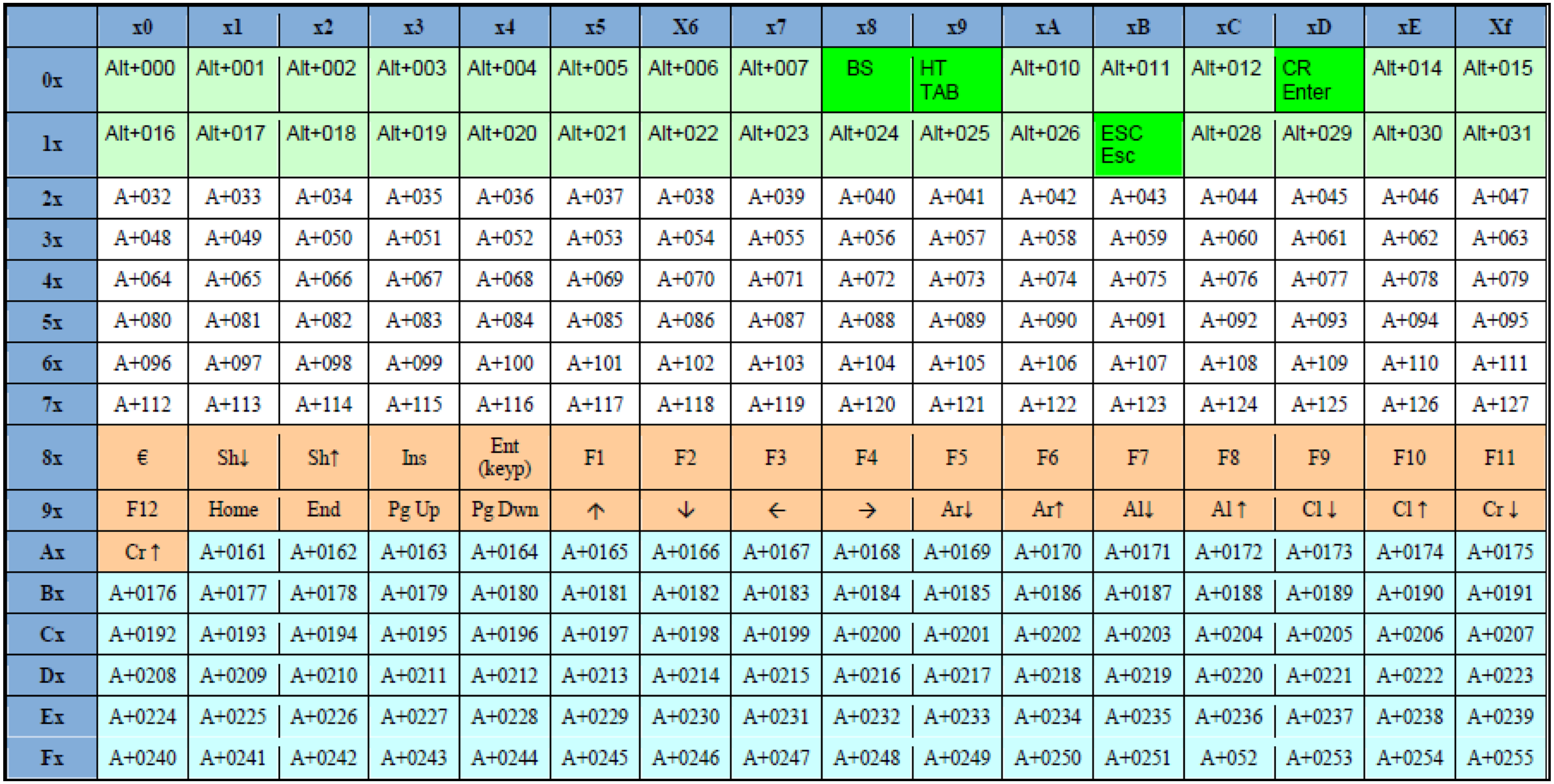
Interface Type PC AT PS/2 or USB-Keyboard — cont.

Table F-2. Scancode Set When Control Character is 02

	x0	x1	x2	x3	x4	x5	X6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	Ar↓	Ar↑	Al↓	Al↑	Cl↓	Cl↑	Cr↓	Cr↑	BS	Tab	→	S+ Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	Space	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	*Del*
8x	€	□	‚	ƒ	„	…	†	‡	ˆ	‰	S	‹	S	‹	Œ	□
9x	□	'	'	"	"	•	–	—	˜	™	š	›	œ	□	ž	Y
Ax	NBSP	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	-	®	¯
Bx	°	±	²	³	´	µ	¶		¸	¹	º	»	¼	½	¾	¿
Cx	A	A	A	A	A	A	Æ	Ç	E	E	E	E	I	I	I	I
Dx	Ð	□	O	O	O	O	O	×	Ø	U	U	U	U	Y	Þ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Interface type PC AT PS/2 Alt Mode or USB-Keyboard Alt Mode

Table F-3. Scancode Set When Control Character is 00 or 01



	x0	x1	x2	x3	x4	x5	X6	x7	x8	x9	xA	xB	xC	xD	xE	Xf
0x	Alt+000	Alt+001	Alt+002	Alt+003	Alt+004	Alt+005	Alt+006	Alt+007	BS	HT TAB	Alt+010	Alt+011	Alt+012	CR Enter	Alt+014	Alt+015
1x	Alt+016	Alt+017	Alt+018	Alt+019	Alt+020	Alt+021	Alt+022	Alt+023	Alt+024	Alt+025	Alt+026	ESC Esc	Alt+028	Alt+029	Alt+030	Alt+031
2x	A+032	A+033	A+034	A+035	A+036	A+037	A+038	A+039	A+040	A+041	A+042	A+043	A+044	A+045	A+046	A+047
3x	A+048	A+049	A+050	A+051	A+052	A+053	A+054	A+055	A+056	A+057	A+058	A+059	A+060	A+061	A+062	A+063
4x	A+064	A+065	A+066	A+067	A+068	A+069	A+070	A+071	A+072	A+073	A+074	A+075	A+076	A+077	A+078	A+079
5x	A+080	A+081	A+082	A+083	A+084	A+085	A+086	A+087	A+088	A+089	A+090	A+091	A+092	A+093	A+094	A+095
6x	A+096	A+097	A+098	A+099	A+100	A+101	A+102	A+103	A+104	A+105	A+106	A+107	A+108	A+109	A+110	A+111
7x	A+112	A+113	A+114	A+115	A+116	A+117	A+118	A+119	A+120	A+121	A+122	A+123	A+124	A+125	A+126	A+127
8x	€	Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Home	End	Pg Up	Pg Dwn	↑	↓	←	→	Ar↓	Ar↑	Al↓	Al↑	Cl↓	Cl↑	Cr↓
Ax	Cr↑	A+0161	A+0162	A+0163	A+0164	A+0165	A+0166	A+0167	A+0168	A+0169	A+0170	A+0171	A+0172	A+0173	A+0174	A+0175
Bx	A+0176	A+0177	A+0178	A+0179	A+0180	A+0181	A+0182	A+0183	A+0184	A+0185	A+0186	A+0187	A+0188	A+0189	A+0190	A+0191
Cx	A+0192	A+0193	A+0194	A+0195	A+0196	A+0197	A+0198	A+0199	A+0200	A+0201	A+0202	A+0203	A+0204	A+0205	A+0206	A+0207
Dx	A+0208	A+0209	A+0210	A+0211	A+0212	A+0213	A+0214	A+0215	A+0216	A+0217	A+0218	A+0219	A+0220	A+0221	A+0222	A+0223
Ex	A+0224	A+0225	A+0226	A+0227	A+0228	A+0229	A+0230	A+0231	A+0232	A+0233	A+0234	A+0235	A+0236	A+0237	A+0238	A+0239
Fx	A+0240	A+0241	A+0242	A+0243	A+0244	A+0245	A+0246	A+0247	A+0248	A+0249	A+0250	A+0251	A+052	A+0253	A+0254	A+0255

Interface type PC AT PS/2 Alt Mode or USB-Keyboard Alt Mode — cont.

Table F-4. Scancode Set When Control Character is 02

	x0	x1	x2	x3	x4	x5	X6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	Ar↓	Ar↑	Al↓	Al ↑	Cl ↓	Cl ↑	Cr ↓	Cr ↑	BS	Tab	→	S+ Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	A+032	A+033	A+034	A+035	A+036	A+037	A+038	A+039	A+040	A+041	A+042	A+043	A+044	A+045	A+046	A+047
3x	A+048	A+049	A+050	A+051	A+052	A+053	A+054	A+055	A+056	A+057	A+058	A+059	A+060	A+061	A+062	A+063
4x	A+064	A+065	A+066	A+067	A+068	A+069	A+070	A+071	A+072	A+073	A+074	A+075	A+076	A+077	A+078	A+079
5x	A+080	A+081	A+082	A+083	A+084	A+085	A+086	A+087	A+088	A+089	A+090	A+091	A+092	A+093	A+094	A+095
6x	A+096	A+097	A+098	A+099	A+100	A+101	A+102	A+103	A+104	A+105	A+106	A+107	A+108	A+109	A+110	A+111
7x	A+112	A+113	A+114	A+115	A+116	A+117	A+118	A+119	A+120	A+121	A+122	A+123	A+124	A+125	A+126	A+127
8x	A+0128	A+0129	A+0130	A+0131	A+0132	A+0133	A+0134	A+0135	A+0136	A+0137	A+0138	A+0139	A+0140	A+0141	A+0142	A+0143
9x	A+0144	A+0145	A+0146	A+0147	A+0148	A+0149	A+0150	A+0151	A+0152	A+0153	A+0154	A+0155	A+0156	A+0157	A+0158	A+0159
Ax	A+0160	A+0161	A+0162	A+0163	A+0164	A+0165	A+0166	A+0167	A+0168	A+0169	A+0170	A+0171	A+0172	A+0173	A+0174	A+0175
Bx	A+0176	A+0177	A+0178	A+0179	A+0180	A+0181	A+0182	A+0183	A+0184	A+0185	A+0186	A+0187	A+0188	A+0189	A+0190	A+0191
Cx	A+0192	A+0193	A+0194	A+0195	A+0196	A+0197	A+0198	A+0199	A+0200	A+0201	A+0202	A+0203	A+0204	A+0205	A+0206	A+0207
Dx	A+0208	A+0209	A+0210	A+0211	A+0212	A+0213	A+0214	A+0215	A+0216	A+0217	A+0218	A+0219	A+0220	A+0221	A+0222	A+0223
Ex	A+0224	A+0225	A+0226	A+0227	A+0228	A+0229	A+0230	A+0231	A+0232	A+0233	A+0234	A+0235	A+0236	A+0237	A+0238	A+0239
Fx	A+0240	A+0241	A+0242	A+0243	A+0244	A+0245	A+0246	A+0247	A+0248	A+0249	A+0250	A+0251	A+052	A+0253	A+0254	A+0255

Table F-5. Scancode Set When Control Character is 00 or 01

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL C+@	SOH C(S)+A	STX C(S)+B	ETX C(S)+C	EOT C+D	ENQ C(S)+E	ACK C(S)+F	BEL C(S)+G	BS	HT TAB	LF C(S)+J	VT C(S)+K	FF C(S)+L	CR Enter	SO C(S)+N	SI C(S)+O
1x	DLE C(S)+P	DC1 C(S)+Q	DC2 C(S)+R	DC3 C(S)+S	DC4 C(S)+T	NAK C(S)+U	SYN C(S)+V	ETB C(S)+W	CAN C(S)+X	EM C(S)+Y	SUB C(S)+Z	ESC Esc	FS C(S)+\	GS C+]	RS C(S)+^	US C(S)+_
2x	Space	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	Del
8x		Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	F13	F14	F15	F16	↑	↓	←	→					Cl↓	Cl↑	

Digital Interface — cont.

Table F-6. Scancode Set When Control Character is 02

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x					Cl↓	Cl↑			BS	Tab	→	S+ Tab	Enter Keypd	Enter	Ins	
1x			←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	Space	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	Del

IBM31xx 102-key

Table F-7. Scancode Set When Control Character is 00 or 01

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL C+@	SOH C(S)+A	STX C(S)+B	ETX C(S)+C	EOT C+D	ENQ C(S)+E	ACK C(S)+F	BEL C(S)+G	BS	HT TAB	LF C(S)+J	VT C(S)+K	FF C(S)+L	CR Enter	SO C(S)+N	SI C(S)+O
1x	DLE C(S)+P	DC1 C(S)+Q	DC2 C(S)+R	DC3 C(S)+S	DC4 C(S)+T	NAK C(S)+U	SYN C(S)+V	ETB C(S)+W	CAN C(S)+X	EM C(S)+Y	SUB C(S)+Z	ESC Esc	FS C(S)+\	GS C+]	RS C(S)+^	US C(S)+_
2x	Space	!	“	#	$	%	&	‘	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	‘	a	B	c	d	e	f	g	h	i	j	k	1	m	n	o
7x	p	q	R	s	t	u	v	w	x	y	z	{	|	}		*Del*
8x		Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Enter	Reset	Insert	Delete	Field -	Field +	Enter paddle	Print1	Ar↓	Ar↑	Al↓	A1 ↑	C1 ↓	C1 ↑	Cr ↓
Ax	Cr ↑															

IBM31xx 102-key — cont.

Table F-8. Scancode Set When Control Character is 02

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	Ar↓	Ar↑	Al↓	Al ↑	Cl ↓	Cl ↑	Cr ↓	Cr ↑	BS	Tab	→	S+ Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	Space	!	“	#	$	%	&	‘	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	‘	a	B	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	R	s	t	u	v	w	x	y	z	{	|	}		*Del*

IBM XT

Table F-9. Scancode Set When Control Character is 00 or 01

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL C+@	SOH C(S)+A	STX C(S)+B	ETX C(S)+C	EOT C+D	ENQ C(S)+E	ACK C(S)+F	BEL C(S)+G	BS C(S)+H	HT TAB	LF C(S)+J	VT C(S)+K	FF C(S)+L	CR Enter	SO C(S)+N	SI C(S)+O
1x	DLE C(S)+P	DC1 C(S)+Q	DC2 C(S)+R	DC3 C(S)+S	DC4 C(S)+T	NAK C(S)+U	SYN C(S)+V	ETB C(S)+W	CAN C(S)+X	EM C(S)+Y	SUB C(S)+Z	ESC Esc	FS C(S)+\	GS C+]	RS C(S)+^	US C(S)+_
2x	Space	!	“	#	$	%	&	‘	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	‘	a	B	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	R	s	t	u	v	w	x	y	z	{	|	}		*Del*
8x		Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Home	End	Pg Up	Pg Dwn	↑	↓	←	→	Ar↓	Ar↑	Al↓	Al↑	Cl↓	Cl↑	Cr↓
Ax	Cr↑															

IBM XT — cont.

Table F-10. Scancode Set When Control Character is 02

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	Ar↓	Ar↑	Al↓	Al↑	Cl↓	Cl↑	Cr↓	Cr↑	BS	Tab	→	S+ Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	Space	!	“	#	$	%	&	‘	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	‘	a	B	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	R	s	t	u	v	w	x	y	z	{	|	}		*Del*

Microsoft Windows Codepage 1252

Windows-1252 is a character encoding of the Latin alphabet, used by default in the legacy components of Microsoft Windows in English and some other Western languages.

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	€ 20AC		‚ 201A	ƒ 0192	„ 201E	… 2026	† 2020	‡ 2021	ˆ 02C6	‰ 2030	Š 0160	‹ 2039	Œ 0152		Ž 017D	
90		‘ 2018	’ 2019	“ 201C	” 201D	• 2022	– 2013	— 2014	˜ 02DC	™ 2122	š 0161	› 203A	œ 0153		ž 017E	Ÿ 0178
A0	NBSP 00A0	¡ 00A1	¢ 00A2	£ 00A3	¤ 00A4	¥ 00A5	¦ 00A6	§ 00A7	¨ 00A8	© 00A9	ª 00AA	« 00AB	¬ 00AC	- 00AD	® 00AE	¯ 00AF
B0	° 00B0	± 00B1	² 00B2	³ 00B3	´ 00B4	µ 00B5	¶ 00B6	· 00B7	¸ 00B8	¹ 00B9	º 00BA	» 00BB	¼ 00BC	½ 00BD	¾ 00BE	¿ 00BF
C0	À 00C0	Á 00C1	Â 00C2	Ã 00C3	Ä 00C4	Å 00C5	Æ 00C6	Ç 00C7	È 00C8	É 00C9	Ê 00CA	Ë 00CB	Ì 00CC	Í 00CD	Î 00CE	Ï 00CF
D0	Ð 00D0	Ñ 00D1	Ò 00D2	Ó 00D3	Ô 00D4	Õ 00D5	Ö 00D6	× 00D7	Ø 00D8	Ù 00D9	Ú 00DA	Û 00DB	Ü 00DC	Ý 00DD	Þ 00DE	ß 00DF
E0	à 00E0	á 00E1	â 00E2	ã 00E3	ä 00E4	å 00E5	æ 00E6	ç 00E7	è 00E8	é 00E9	ê 00EA	ë 00EB	ì 00EC	í 00ED	î 00EE	ï 00EF
F0	ð 00F0	ñ 00F1	ò 00F2	ó 00F3	ô 00F4	õ 00F5	ö 00F6	÷ 00F7	ø 00F8	ù 00F9	ú 00FA	û 00FB	ü 00FC	ý 00FD	þ 00FE	ÿ 00FF

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ASCII Chart

ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.
NUL	00	SP	20	@	40	‘	60
SOH	01	!	21	A	41	a	61
STX	02	“	22	B	42	b	62
ETX	03	#	23	C	43	c	63
EOT	04	$	24	D	44	d	64
ENQ	05	%	25	E	45	e	65
ACK	06	&	26	F	46	f	66
BEL	07	’	27	G	47	g	67
BS	08	(	28	H	48	h	68
HT	09	)	29	I	49	i	69
LF	0A	*	2A	J	4A	j	6A
VT	0B	+	2B	K	4B	k	6B
FF	0C	,	2C	L	4C	l	6C
CR	0D	-	2D	M	4D	m	6D
SO	0E	.	2E	N	4E	n	6E
SI	0F	/	2F	O	4F	o	6F
DLE	10	0	30	P	50	p	70
DC1	11	1	31	Q	51	q	71
DC2	12	2	32	R	52	r	72
DC3	13	3	33	S	53	s	73
DC4	14	4	34	T	54	t	74
NAK	15	5	35	U	55	u	75
SYN	16	6	36	V	56	v	76
ETB	17	7	37	W	57	w	77
CAN	18	8	38	X	58	x	78
EM	19	9	39	Y	59	y	79
SUB	1A	:	3A	Z	5A	z	7A
ESC	1B	;	3B	[	5B	{	7B
FS	1C	<	3C	\	5C	|	7C
GS	1D	=	3D	]	5D	}	7D
RS	1E	>	3E	^	5E	~	7E
US	1F	?	3F	_	5F	DEL	7F

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